

THE CANADIAN MEDICAL ASSOCIATION
LE JOURNAL DE
L'ASSOCIATION MÉDICALE CANADIENNE

AUGUST 6, 1960 • VOL. 83, NO. 6

**A LOW SODIUM, HIGH WATER,
HIGH POTASSIUM REGIMEN IN THE
SUCCESSFUL MANAGEMENT OF
SOME CARDIOVASCULAR DISEASES
PRELIMINARY CLINICAL REPORT**

DEMETRIO SODI-PALLARES, M.D.,*
BERNARDO L. FISHLEDER, M.D.,*
FERNANDO CISNEROS, M.D.,*
MARIO VIZCAINO, M.D.,*
ABDO BISTENI, M.D.,*
GUSTAVO A. MEDRANO, M.D.,*
BURTON J. POLANSKY, M.D.,† and
ALFREDO DE MICHELI, M.D.,*
Mexico City, Mexico

THE IMPORTANCE of restriction of sodium in the treatment of oedematous patients, particularly those with cardiac insufficiency, is almost universally accepted. There is no unanimity in respect to the degree of this restriction, but the general tendency is to reduce the ingestion of sodium significantly in order to achieve worth-while therapeutic results. Another illness in which the restriction of sodium has many adherents is arterial hypertension. It is also of interest to note the work of Raab,⁷² who studied the role of catecholamines in angina pectoris and found that sodium had a potentiating effect. Finally, of great significance are the recent investigations of Selye⁷⁹ in the experimental production of myocardial necrosis by the combined effect of the adrenal hormones and sodium. All of these factors suggest that it is possible to influence the various manifestations of cardiac disease by means of restriction and/or increased elimination of the sodium ion.

A very different picture is seen in relation to the amount of liquid that must be ingested by a patient on a low-sodium program. A large number of cardiologists still follow the recommendation of Hippocrates, that the oedematous patient should eat "only things dry and bitter" and "drink very little". The majority probably let their patients take water *ad lib*, which means that ingestion of water depends mainly on the individual habits and customs of the patient. The early experiences of

Schemm,⁷⁵ and also the investigations of Wolf⁹³ and Gorham and co-workers,³⁴ demonstrated that the volume of liquid ingested during a low sodium regimen is a most important factor.

The recent introduction of drugs with a marked saluretic effect, such as chlorothiazide and derivatives, has been of great value in the treatment of patients with fluid retention, as well as of those with arterial hypertension. However, such drugs also have the inconvenience of producing an excessive loss of potassium, an ion which plays an important role as a protector of the myocardium when one considers again the experiments of Selye.⁷⁹

The original method of treatment that will be outlined in this presentation has been evolved over the past five years for the routine management of various cardiovascular ailments.

We believe that our regimen may be a contribution to the therapeutic armamentarium of every physician, inasmuch as it has proved to be very useful in our hands after repeated application. Moreover, in many cases we have practically been able to abandon other adjunctive agents, such as mercurial diuretics, xanthine derivatives, and ganglionic blockers, and even further to restrict the use of digitalis.

The types of cases in which we successfully use the regimen has grown to be very extensive: all forms of cardiac failure, particularly refractory cardiac failure, angina pectoris, essential hypertension and some of the secondary varieties, acute myocardial infarction, chronic cor pulmonale and pulmonary congestion of mechanical origin such as that of mitral stenosis.

The response to the regimen is usually prompt even in refractory cardiac failure. In hypertension the blood pressure falls to normal or near normal levels; pulmonary congestion as in mitral stenosis is significantly decreased, and in many instances the patients are then considered better candidates for commissurotomy. In acute myocardial infarction the course with our program is usually uneventful, thus reducing the period of absolute bed rest and the hazards of return to active life.

In regard to the reference to restriction of digitalis, we should point out that we use digitalis only in cases of tachyarrhythmia, i.e. rapid auricular fibrillation, or in paroxysmal dyspnoea which

*From the Instituto Nacional de Cardiología, Mexico City.
†Postdoctoral Research Fellow, National Heart Institute, Public Health Service, U.S.A.

presages acute pulmonary oedema. With pulse rates below 90 per minute we have not observed consistently good results with digitalis, and on the contrary we have been impressed by the results of our program in such cases.

METHOD

The eight fundamental points of the regimen are:

1. *High water intake*, consisting of two to three litres of "natural" water per day. The use of a high water intake was originally proposed by Schemm.⁷⁵⁻⁷⁷ This method was not generally accepted and was soon abandoned, very probably because of failure to use or observe the other principles set forth in this paper. The water should be "natural" or flavoured by very small amounts of fruit juices. The physician must always keep in mind that there are localities in which the tap water contains large amounts of minerals, mainly sodium salts. Carbonated beverages are particularly notorious in this respect.

The ideal amount of water necessary for a favourable result will vary from patient to patient, but we consider, along with Wolf,^{93, 94} that two and a half litres per day is the amount which usually achieves the greatest diuresis.

2. *Salt restriction*.—Restriction of salt is variable according to the status of the patient. In general terms, in severe cases the allowance does not exceed 300 mg. sodium ion per day. In cases under good control we sometimes permit up to 1.5 g. per day in association with saluretic drugs (hydrochlorothiazide, etc.) in order not to attain a positive sodium balance. On the other hand we have found it necessary to avoid a fall in serum sodium below 130 mEq./l. In such cases we permit small increments of salt but adhere rigorously to the other aspects of the regimen.

3. *Foods prohibited because of naturally high sodium content*.—Those foods which contain more than 100 mg. of sodium per 100 g. of food must be absolutely prohibited. We have found that it is necessary to educate the patient carefully in this respect since many misconceptions are encountered even among physicians and dietitians. Some examples of foods and types of foods rich in sodium and therefore to be avoided are: ham, bacon, salami, all types of sausages and most cheeses; and all types of sea foods—shrimp, lobster, lagostinas, clams, oysters, sardines, anchovies, snails, caviar, tunafish and salmon. Some white fresh-water fish may be permitted. Also prohibited are many types of canned foods: juices, marmalades, jellies, etc., because sodium benzoate is often used as a preservative; also foods that are bottled, such as olives and pickles. Many packaged dry cereal foods are not to be permitted (oatmeal may be taken, since it is prepared without salt). French bread, white bread, rye bread and other types are to be avoided. (in Mexico, tortillas are used and these contain no

appreciable sodium). Salt crackers are not permitted, but again in Mexico we have a very palatable cracker free of sodium. The whites of eggs must be prohibited, but the yolks are permitted. Three vegetables which are high in sodium content must be avoided—spinach, beets and celery. Finally, the amount of milk and milk products (ice cream) must be restricted.

The listing given above includes most but not all of the common offenders that negate any attempt at a truly low sodium diet.

In general terms we recommend the following foods for inclusion in the diet: sodium-free milk (Lonalac), rice, meat, beans, chicken, white fish (as mentioned previously); practically all vegetables with the exception of spinach, beets, and celery; and desserts prepared at home (gelatine desserts, sherbet, etc.). In Mexico we allow chile sauce for seasoning and salt substitutes such as Zalima or Co-Salt or even lemon juice.

4. *A well-balanced diet* must be calculated for each patient. In our experience improvement is usually obtained and maintained only if the patient eats well.

5. *Saluretic agents* (hydrochlorothiazide, acetazolamide, etc.).—The use of saluretic drugs is of great importance inasmuch as it helps to make the restriction of salt less mandatory. However, it is necessary to be alert for side effects from the use of these drugs, particularly potassium loss. This is one reason why we usually give potassium as outlined below.

6. *Potassium*.—As pointed out above, the loss of potassium from the action of the saluretic drugs, or from sodium diuresis, should be watched for by periodic plasma determinations and serial electrocardiograms. The anticipated excess elimination of potassium is counterbalanced by the use of complementary doses of potassium chloride (0.5 to 1.0 g., t.i.d.) in order to maintain the level of this electrolyte above 4.2 mEq./l. In our regimen we consider that hypokalaemia is present when levels are lower than this figure.

7. *Steroids*.—In some cases of refractory cardiac failure or in the presence of persistent hypotension due to recent myocardial infarction, we add corticosteroids (prednisolone, triamcinolone, etc.) to the regimen; these do not reduce but rather increase the diuresis and aid in restoring the blood pressure to normal levels.

8. *Hyponatraemia secondary to use of saluretics*.—In a small number of instances we have observed hyponatraemia with or without hypochloraemia as a complication of the use of saluretic agents such as hydrochlorothiazide. In this situation we substitute acetazolamide in combination with ammonium chloride.

Clinical Indications of Improvement

The ability to titrate each of these principles in order to obtain maximum improvement can be reached only with practice, and it must be re-

TABLE I.—RESULTS IN TREATMENT OF CONGESTIVE HEART FAILURE.

| Case | Sex | Age | Edema | | Dyspnoea | | Pulmonary congestion | | Liver size | | Loss of weight lb. | Time days | Diagnosis. Added treatment. Comments |
|------|-----|-----|--------|-------|----------|-------|-------------------------|-------|------------|-------|--------------------------|--------------|---|
| | | | Before | After | Before | After | Before | After | Before | After | | | |
| 1 | F | 76 | + | 0 | ++++ | + | ++++ | 0 | + | 0 | 7.5 | 16 | ASHD. HHD. Previously on digitalis |
| 2 | M | 73 | ++++ | ++ | +++ | ++ | +++ | + | +++ | +++ | 10 | 14 | ASHD. MI. Liver Ca. Previously on digitalis |
| 3 | F | 32 | + | 0 | +++ | 0 | +++ | 0 | ++ | 0 | 7 | 7 | Post M. Comm. # |
| 4 | F | 48 | 0 | 0 | +++ | 0 | +++ | 0 | 0 | 0 | 7 | 5 | Post M. Comm. # |
| 5 | F | 85 | + | 0 | +++ | + | ++ | 0 | 0 | 0 | 3 | 5-7 | HHD. Recurrent failure on digitalis |
| 6 | M | 73 | 0 | 0 | +++ | + | ++++ | 0 | 0 | 0 | 1 | 15 | ASHD. Old MI |
| 7 | M | 67 | +++ | 0 | ++ | 0 | ++ | 0 | 0 | 0 | 9.5 | 15 | HHD. Pulm. embolism. Chlorothiazide |
| 8 | F | 67 | + | 0 | ++ | 0 | ++++ | + | 0 | 0 | 4 | 8 | ASHD. Previously on digitalis. KC1 on admis. |
| 9 | M | 67 | ++ | 0 | +++ | 0 | ++ | 0 | + | 0 | 7 | 6 | CAD. CCP |
| 10 | M | 74 | + | 0 | +++ | 0 | +++ | 0 | ++ | 0 | 8 | 6 | ASHD. HHD. # |
| 11 | M | 65 | ++ | 0 | +++ | + | ++ | ++ | ++ | ++ | 4 | 10 | ASHD |
| 12 | M | 58 | + | +- | ++ | 0 | ++ | + | +- | 0 | 3 | 30 | CCP. Digitalis |
| 13 | M | 44 | ++ | 0 | +++ | 0 | +++ | 0 | ++ | 0 | ? | 5 | Recent MI |
| 14 | F | 28 | + | 0 | ++ | 0 | ++ | + | + | + | 4 | 12 | RHD. MS |
| 15 | M | 55 | 0 | 0 | +++ | 0 | ++ | 0 | 0 | 0 | 3 | 4 | CAD |
| 16 | M | 62 | ++ | +- | +++ | +- | ++ | 0 | + | + | 6 | 7 | HHD. Digitalis |
| 17 | M | 57 | ++ | 0 | ++ | 0 | ++ | 0 | ++ | 0 | 8 | 28 | ASHD |
| 18 | M | | 0 | 0 | ++ | 0 | ++ | 0 | 0 | 0 | 4.5 | 56 | ASHD |
| 19 | F | | + | 0 | +++ | 0 | +++ | + | + | 0 | 3.5 | 14 | RHD. DML |
| 20 | F | | ++ | 0 | ++++ | 0 | ++++ | 0 | ++++ | + | 1 | 49 | RHD. DML. DAL |
| 21 | F | | ++ | + | +++ | 0 | +++ | 0 | ++ | 0 | 14.5 | 21 | ASHD |
| 22 | M | | + | 0 | +++ | 0 | +++ | 0 | ++ | 0 | 1 | 10 | RHD. DML. TI |
| 23 | M | | ++ | 0 | +++ | 0 | +++ | 0 | +++ | + | 5 | 21 | RHD. DML. TI |
| 24 | M | | ++ | 0 | +++ | 0 | +++ | 0 | +++ | + | 2 | 7 | RHD. DML. DAL. TI |
| 25 | M | | + | 0 | ++ | 0 | ++ | 0 | ++ | 0 | 8.5 | 7 | ASHD |
| 26 | M | 58 | + | 0 | ++++ | 0 | +++ | 0 | ++ | 0 | 11 | 7 | ASHD. CAD. HHD. CCP. Aminophylline |
| 27 | M | 63 | +++ | 0 | +++ | 0 | ++++ | 0 | ++ | 0 | 17 | 14 | ASHD. A.F. A-V block. Digoxin |
| 28 | F | 65 | ++ | 0 | +++ | + | +++ | + | + | 0 | 4.5 | 7 | ASHD. HHD. Recurrent failure on digitalis |
| 29 | F | 81 | +++ | + | +++ | 0 | ++ | 0 | ++ | 0 | 3 | 5 | ASHD. Varicose veins |
| 30 | M | 21 | + | 0 | ++ | 0 | ++ | 0 | +++ | ++ | 4 | 10 | RHD. DML. TI. Pulm. embolism. AF. Digitalis. Tromexan® |
| 31 | F | 48 | + | 0 | +++ | 0 | +++ | 0 | +++ | ++ | 6 | 14 | RHD. DML. TI. AF. digitalis |
| 32 | F | 34 | ++ | 0 | ++ | 0 | ++ | 0 | +++ | ++ | 5 | 18 | RHD. DML. TI. AF. Digitali |
| 33 | F | 60 | +++ | 0 | +++ | 0 | +++ | 0 | ++ | 0 | 10 | 21 | ASHD. HHD. Digitalis |
| 34 | M | 57 | 0 | 0 | +++ | + | +++ | + | + | 0 | 3 | 10 | ASHD. CAD |
| 35 | M | 78 | + | 0 | +++ | ++ | +++ | + | + | 0 | 2 | 15 | ASHD. CCP. #. Kyphoscoliosis |
| 36 | F | 58 | 0 | 0 | ++ | 0 | + | 0 | 0 | 0 | 2.5 | 7 | CAD. Old MI |
| 37 | M | 64 | + | 0 | ++ | + | ++ | 0 | + | 0 | 3 | 7 | CAD. Old MI |
| 38 | M | 71 | ++ | 0 | +++ | 0 | +++ | + | ++ | + | 12.5 | 21 | ASHD. CAD. Obesity |
| 39 | F | 19 | ++ | 0 | ++ | 0 | ++ | 0 | + | 0 | 4 | 14 | RHD. DML. AF. Digitalis |
| 40 | F | 42 | 0 | 0 | +++ | + | +++ | + | ++ | + | 5 | 14 | CCP. Chronic bronchitis. Aminophylline, antibiotics |
| 41 | M | 65 | ++ | 0 | ++++ | + | +++ | + | +++ | + | 8 | 15 | ASHD. CCP. Chronic bronchitis. Aminophylline, antibiotics |

TABLE I.—(Continued)

| Case | Sex | Age | Edema | | Dyspnœa | | Pulmonary congestion | | Liver size | | Loss of weight lb. | Time days | Diagnosis. Added treatment. Comments |
|------|-----|-----|--------|-------|---------|-------|----------------------|-------|------------|-------|--------------------|-----------|--|
| | | | Before | After | Before | After | Before | After | Before | After | | | |
| 42 | F | 53 | 0 | 0 | ++ | 0 | ++ | 0 | 0 | 0 | 2.2 | 10 | CAD. Old MI. Tromexan® |
| 43 | M | 60 | + | 0 | ++ | 0 | ++ | 0 | ++ | + | 4.5 | 15 | ASHD. HHD |
| 44 | F | 65 | +++ | 0 | ++++ | + | ++++ | + | +++ | + | 10 | 21 | Luetic aortitis. AI. ASHD. CAD. Angina pectoris. Digoxin. Ipro-niazid |
| 45 | M | 28 | +++ | 0 | ++++ | + | ++++ | + | +++ | ++ | 11 | 19 | RHD. DML. DAL. TI. AF. Digitalis |
| 46 | M | 65 | + | 0 | +++ | 0 | +++ | 0 | ++ | 0 | 4.5 | 8 | ASHD. Pulm. embolism (after prostatectomy) Tromexan®. Antibiotics |
| 47 | M | 50 | ++ | 0 | ++++ | 0 | ++++ | 0 | ++ | 0 | 6.5 | 16 | Recent MI. Pulm. embolism. Pleural effusion. Tromexan®. |
| 48 | F | 80 | ++ | 0 | +++ | 0 | +++ | + | ++ | + | 6 | 15 | ASHD. Acute hæmorrhagic anæmia. Transfusions |
| 49 | F | 85 | +++ | 0 | ++ | 0 | ++ | 0 | ++ | 0 | 7 | 14 | ASHD. Prednisone treatment (discontinued) |
| 50 | M | 67 | ++ | + | ++++ | ++ | +++ | ++ | ++ | ++ | 3 | 21 | CCP. ASHD. Aminophylline |
| 51 | F | 57 | 0 | 0 | +++ | + | + | 0 | 0 | 0 | 3.3 | ? | HHD. CAD |
| 52 | M | 60 | + | 0 | +++ | 0 | +++ | 0 | ++ | + | 13 | 10 | HHD. CCP |
| 53 | M | 60 | +++ | 0 | ++++ | + | +++ | 0 | ++ | 0 | 6 | 15 | CCP |
| 54 | M | 68 | ++ | 0 | +++ | ++ | +++ | 0 | +++ | ++ | 9 | 12 | CCP. Pulmonary Ca. AF. Digitalized |
| 55 | M | 67 | ++ | 0 | +++ | + | +++ | 0 | ++ | + | 9 | 9 | CCP |
| 56 | F | 55 | 0 | 0 | ++ | 0 | + | 0 | 0 | 0 | 2 | 14 | MS. AI. AF. Digitalized |
| 57 | M | 60 | + | 0 | ++ | 0 | ++ | 0 | 0 | 0 | ? | 10 | MI. Diabetes |
| 58 | F | 58 | + | 0 | ++ | 0 | ++ | 0 | 0 | 0 | 6.5 | 10 | HHD. CAD |
| 59 | F | 51 | 0 | 0 | ++ | 0 | ++ | 0 | 0 | 0 | 6.5 | ? | HHD |
| 60 | M | 64 | 0 | 0 | +++ | 0 | ++ | 0 | 0 | 0 | ? | 36 | AI. Luetic coronary insufficiency |
| 61 | M | 64 | + | 0 | ++ | 0 | ++ | 0 | 0 | 0 | 7 | 46 | HHD. CCP. 1.5 g. NaCl permitted |
| 62 | M | 44 | + | 0 | ++++ | 0 | ++++ | 0 | + | 0 | ? | 7 | Recent MI |
| 63 | M | 65 | 0 | 0 | ++ | 0 | +++ | 0 | + | 0 | ? | 10 | DAL. No chlorothiazide |
| 64 | M | 60 | + | 0 | ++++ | 0 | ++++ | 0 | ++ | 0 | 9 | 10 | CAD. Digitalized |
| 65 | M | 55 | ++ | 0 | ++ | 0 | +++ | 0 | 0 | 0 | 9 | ? | CCP. CAD |
| 66 | F | 71 | 0 | 0 | +++ | +- | +++ | 0 | ++ | + | ? | 14 | CAD |
| 67 | M | 58 | 0 | 0 | ++ | 0 | ++ | 0 | ++ | 0 | 6.5 | 7 | MS. AF. Digitalized |
| 68 | F | 66 | + | 0 | +++ | 0 | ++ | +- | 0 | 0 | 6.5 | 60 | HHD. CAD. Average diuresis 4 litres daily |
| 69 | F | 63 | + | 0 | + | 0 | ++ | 0 | 0 | 0 | 6.5 | 60 | CCP. CAD. Marked intolerance to digitalis |
| 70 | M | 37 | 0 | 0 | +++ | 0 | +++ | + | 0 | 0 | 2 | 15 | Coarctation of the aorta with AI. Data before Hufnagel valve. No treatment required postop. |
| 71 | F | 60 | ++++ | 0 | +++ | 0 | +++ | 0 | ++ | + | 45 | 19 | CCP. CAD. Acetazolamide and NH ₄ Cl instead of chlorothiazide |
| 72 | F | 35 | ++++ | 0 | ++++ | + | ++++ | 0 | ++++ | ++ | 33 | 32 | DML. TI. Digitalized; previous failure to all medical therapy |
| 73 | F | 36 | +++ | 0 | ++++ | + | +++ | 0 | +++ | + | 22 | 10 | DML. DAL. TI. AF. Return of failure when pt. stopped therapy |
| 74 | M | 49 | + | 0 | +++ | 0 | ++ | 0 | 0 | 0 | 6.5 | 10 | Chronic glomerulonephritis. Secondary hypertension. Return of failure when pt. stopped therapy |

TABLE I.—(Continued)

| Case | Sex | Age | Edema | | Dyspnoea | | Pulmonary congestion | | Liver size | | Loss of weight lb. | Time days | Diagnosis. Added treatment. Comments |
|------|-----|-----|--------|-------|----------|-------|----------------------|-------|------------|-------|--------------------|-----------|---|
| | | | Before | After | Before | After | Before | After | Before | After | | | |
| 75 | F | 45 | +++ | 0 | +++ | + | +++ | 0 | +++ | + | 13 | 30 | DML. TI. Rheumatic activity; on steroids, but diuresis was still obtained |
| 76 | F | 52 | 0 | 0 | +++ | 0 | ++ | 0 | 0 | 0 | ? | ? | HHD. CAD |
| 77 | M | 67 | + | 0 | +++ | 0 | +++ | + | 0 | 0 | 6 | 15 | CCP |
| 78 | M | 60 | +++ | 0 | +++ | 0 | +++ | 0 | + | 0 | 11 | 18 | MI. A-V block. Hemiplegia |
| 79 | M | 60 | 0 | 0 | ++++ | 0 | 0 | 0 | 0 | 0 | 4.5 | 30 | HHD. Blood pressure 170/100, 170/70 |
| 80 | M | 68 | ++ | 0 | +++ | 0 | ++ | 0 | 0 | 0 | 4.5 | 17 | CAD. Prostatic Ca. |
| 81 | F | 50 | +++ | 0 | ++ | 0 | + | 0 | 0 | 0 | 6.5 | ? | CAD. Hypothyroidism. On thyroid |
| 82 | M | 60 | ++ | 0 | +++ | 0 | ++ | 0 | 0 | 0 | 29 | 25 | CAD. MI. Diabetes |
| 83 | M | 73 | + | 0 | +++ | 0 | +++ | 0 | +++ | 0 | 11 | 11 | CAD. CCP. Digitalized. Acetazolamide instead of chlorothiazide |

KEY TO ABBREVIATIONS

| | | | | | |
|------|---|---|---------------|---|----------------------------|
| ASHD | = | arteriosclerotic heart disease | DAL | = | double aortic lesion |
| HHD | = | hypertensive heart disease | AI | = | aortic insufficiency |
| CAD | = | coronary artery disease | TI | = | tricuspid insufficiency |
| CCP | = | chronic cor pulmonale | MI | = | myocardial infarction |
| RHD | = | rheumatic heart disease | Post M. Comm. | = | post-mitral commissurotomy |
| DML | = | double mitral lesion | Liver Ca. | = | cancer of the liver |
| MS | = | mitral stenosis | AF | = | auricular fibrillation |
| # | = | NH ₄ Cl, acetazolamide and dexamethasone for initial three days of treatment | | | |

membered that each patient is a different problem. Nevertheless, we have been able to make a sufficient number of clinical observations to set forth the following points:

Very often when a patient improves he spontaneously diminishes his intake of water, and we have become accustomed to checking on this point as the patient improves, for we believe that a high water intake is one of the cornerstones of the program.

Many patients forget to avoid one or two of the sodium-rich foods that are prohibited. Thus, we review the diet at each of the first few visits and if there is failure to improve we search even more carefully for the offending foods.

The action of the saluretic agents such as hydrochlorothiazide is less effective if there is not a high water intake.

We feel that it is a common observation that many patients have great difficulty in drinking 10 glasses of water a day. In such cases we reduce the intake to 1500 c.c. per day (6 glasses), but we emphasize very strongly the importance of achieving at least this level of intake of water in each 24 hours.

Some patients will complain of great weakness because of the reduction of sodium levels. In these cases we reduce the amount of hydrochlorothiazide and allow the salt intake to range between 0.5 and 1.0 g. per day.

Finally, one of the best indices of improvement is the patient's weight. We attempt to maintain weight at the level at which we observe the greatest amount of improvement. Further, we will permit a greater intake of salt slowly, as long as this optimum weight remains stable.

RESULTS

Results in Congestive Heart Failure

The results of treatment of 83 patients with cardiac insufficiency are given in Table I. The effects of therapy on the major signs and symptoms—edema, dyspnoea, pulmonary congestion, hepatomegaly and loss of weight—are noted during the period of observation of each case, and the diagnoses are given. The majority were patients with arteriosclerotic heart disease, coronary heart disease or hypertensive heart disease, but we also followed up a fair number of cases of rheumatic heart disease and chronic cor pulmonale. Furthermore, most of the rheumatic patients had tricuspid insufficiency, probably on an organic basis; this is a relatively frequent lesion in Mexico.⁷

Of the 83 patients, digitalis was given to 18. In eight of these the basic reason for using the drug was auricular fibrillation with a rapid ventricular response. In many patients there had been no previous response to digitalis and conventional therapy, yet improvement was obtained with the use of our program.

The duration of the observation varied from four to 56 days, averaging 16.7 days. The weight loss varied from 1 to 45 lb., averaging 7.6 lb. in the 76 cases for which sufficient data exist on this point.

The results of treatment are summarized in Table I. In 43 cases (57.8%) the signs of insufficiency disappeared completely, in 32 cases (38.5%) they were reduced to a minimum, and in eight cases (9.6%) there was only slight or moderate reduction. Thus excellent to good results were obtained in 90.3% of the cases. Edema, pulmonary congestion and dyspnoea were the parameters that

responded most rapidly, while hepatomegaly responded somewhat less favourably and rapidly. This was seen particularly in the rheumatic patients with tricuspid insufficiency who had long-standing histories of cardiac failure, suggesting that "cardiac cirrhosis" may have been a factor.

In summary, the clinical results in cardiac insufficiency have been extremely impressive with this program. The major points are that the regimen has been of great help even in the severe cases of refractory failure, and we have become accustomed to using it before the more conventional types of therapy. Finally, we have been able to discontinue use of digitalis in some of our patients, thus avoiding the real hazards of overdosage with this drug.

Results in Hypertension

Table II summarizes the effects of the use of this program in 100 patients with arterial hypertension. We have compared the mean systolic and diastolic blood pressure before and after therapy, and the difference is given. We have also entered the duration of observation in each case, and the amount of weight lost when this was recorded. Table III gives the statistical analysis of the results of therapy. These results are statistically significant, and the decrease in systolic and diastolic pressure is greater than that reported by other workers using chlorothiazide or its derivatives alone.^{15, 30}

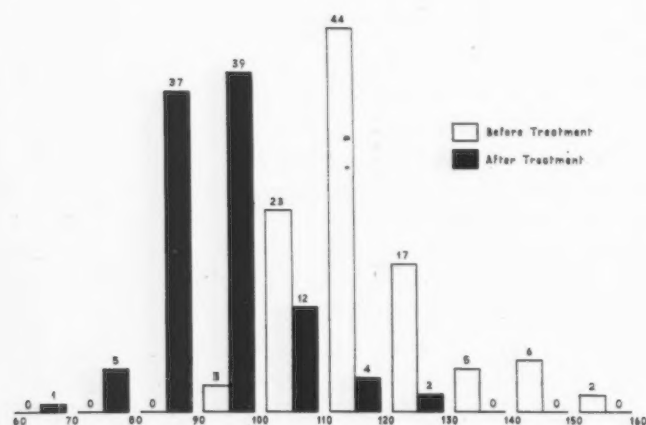


Fig. 1

Distribution of Cases According to Diastolic Pressure (mm. Hg) Before and After treatment

Fig. 1 shows the frequency of distribution of diastolic pressure levels before and after therapy. It may be seen that there is a shift of the distribution to lower levels after therapy.

In Figs. 2 and 3 we show the differences of systolic and diastolic pressures before and after therapy. Note that the diastolic differences are regular (Fig. 2) while the systolic curve (Fig. 3) has two peaks, one at a level of 31-40 mm. Hg and the other at a level of 51-60 mm. Hg. This irregular distribution cannot be explained from our data. It may possibly be due to factors which

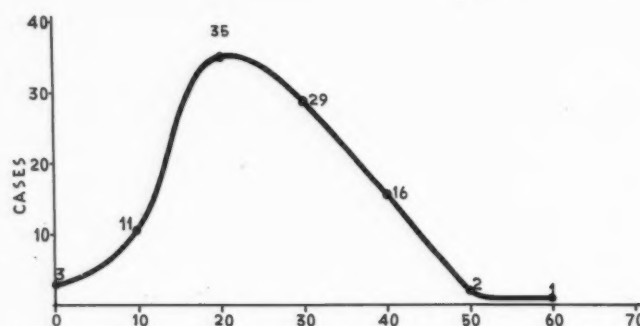


Fig. 2

Decrease in Diastolic Pressure (mm. Hg) After Treatment

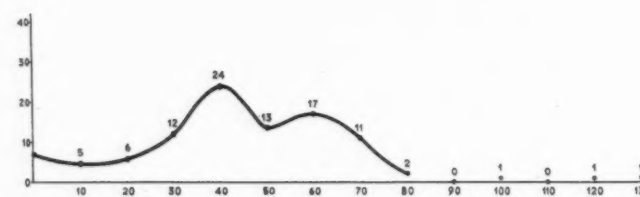


Fig. 3

Decrease in Systolic Pressure (mm. Hg) After Treatment

were not controlled or analyzed in our series, such as bed rest or the emotional status of the patient, which in general influence the systolic more than the diastolic pressure.

As may be seen from Table II, there are some cases in which no significant pressure changes were observed. It is possible that these patients did not follow the program carefully, for we have cases (Cases 27, 37 and 38) in which the pressure fell and rose again when the program was discontinued. In other cases, when the patients discontinued the KCl (Case 40), we noted a rise in the pressure.

In two cases (Cases 31 and 32) we obtained falls in blood pressure with the regimen but not using diuretics. In three cases previously refractory to drug therapy, including chlorothiazide, we obtained blood pressure decreases by only a low-salt, high-water and supplementary-potassium regimen.

In a large number of the cases, there was loss of weight even in the absence of oedema or insufficiency. However, we could not establish a relationship between the weight loss and its effect on the pressure. Patients with insufficiency or angina pectoris showed improvement of these conditions as the pressure decreased.

Of great interest are the two patients with toxæmia of pregnancy who had elevated diastolic pressures. In one patient with severe nausea we administered 5% glucose intravenously in order to obtain a high water intake. In both cases the response of the blood pressure and the diuresis was rapid and the further course was practically uneventful. In our one case of malignant hypertension with uræmia, the pressure fell considerably, but the patient died in uræmia. Perhaps some of the failures may have been due to advanced renal involvement, but we do not have sufficient data to allow this conclusion.

TABLE II.—EFFECT OF THE REGIMEN ON SYSTOLIC AND DIASTOLIC BLOOD PRESSURE IN AMBULATORY HYPERTENSIVE PATIENTS

| Case | Sex | Age | Systolic pressure | | | Diastolic pressure | | | Time (days) | Observations |
|------|-----|-----|-------------------|-------|------------|--------------------|-------|------------|-------------|--|
| | | | B. T. | A. T. | Difference | B. T. | A. T. | Difference | | |
| 1 | F | 55 | 220 | 165 | -55 | 120 | 95 | -25 | 15 | Weight loss 5 lb. |
| 2 | F | 63 | 230 | 170 | -60 | 120 | 90 | -30 | 4 | Weight loss 4 lb. |
| 3 | M | 65 | 155 | 165 | +10 | 105 | 105 | 0 | 30 | No response |
| 4 | F | 54 | 210 | 170 | -40 | 110 | 100 | -10 | 90 | Weight loss 21 lb. |
| 5 | M | 65 | 210 | 140 | -70 | 110 | 84 | -26 | 24 | |
| 6 | M | 36 | 165 | 170 | +5 | 100 | 100 | 0 | 60 | No response |
| 7 | F | 66 | 200 | 160 | -40 | 120 | 85 | -35 | 12 | Angina |
| 8 | F | 47 | 235 | 170 | -65 | 130 | 95 | -35 | 21 | |
| 9 | F | 48 | 210 | 140 | -70 | 125 | 90 | -35 | 21 | Loss 3 lb.; no response with other hypotensive drugs |
| 10 | F | 61 | 240 | 180 | -60 | 140 | 110 | -30 | 28 | Loss 2 lb. Previous drug failure |
| 11 | F | 52 | 210 | 160 | -50 | 110 | 95 | -15 | 7 | |
| 12 | M | 65 | 240 | 200 | -40 | 140 | 115 | -25 | 21 | Previous drug failure |
| 13 | F | 58 | 190 | 135 | -55 | 110 | 85 | -25 | 7 | |
| 14 | M | 38 | 190 | 130 | -60 | 110 | 85 | -25 | 14 | Loss 2 lb. |
| 15 | M | 65 | 210 | 170 | -40 | 100 | 90 | -10 | 7 | Loss 1 lb. |
| 16 | F | 50 | 200 | 150 | -50 | 115 | 100 | -15 | 15 | Loss 4 lb. |
| 17 | F | 48 | 180 | 130 | -50 | 100 | 85 | -15 | 21 | |
| 18 | M | 63 | 250 | 240 | -10 | 130 | 125 | -5 | 14 | No response; previous drug failure |
| 19 | F | 72 | 210 | 200 | -10 | 115 | 100 | -15 | 30 | Loss 2 lb. |
| 20 | F | 61 | 175 | 160 | -15 | 105 | 90 | -15 | 30 | Loss 2 lb. |
| 21 | M | 58 | 220 | 140 | -80 | 115 | 80 | -35 | 7 | Loss 11 lb. Congestive heart failure |
| 22 | F | 65 | 200 | 160 | -40 | 110 | 90 | -20 | 7 | Loss 4.5 lb. Congestive heart failure |
| 23 | F | 60 | 205 | 175 | -30 | 120 | 100 | -20 | 21 | Loss 10 lb. Congestive heart failure |
| 24 | M | 60 | 180 | 140 | -40 | 100 | 90 | -10 | 14 | Heart failure which disappeared |
| 25 | F | 57 | 160 | 160 | 0 | 110 | 98 | -12 | 12 | Angina, which disappeared |
| 26 | M | 46 | 180 | 140 | -40 | 115 | 80 | -35 | 10 | |
| 27 | M | 40 | 160 | 120 | -40 | 110 | 90 | -20 | 63 | Rise in pressure with each self-discontinuation of treatment |
| 28 | M | 44 | 180 | 125 | -35 | 115 | 90 | -25 | 8 | Heart failure which disappeared |
| 29 | F | 58 | 250 | 210 | -40 | 110 | 85 | -25 | 10 | |
| 30 | F | 68 | 200 | 140 | -60 | 90 | 60 | -30 | 15 | |
| 31 | F | 47 | 180 | 130 | -50 | 110 | 80 | -30 | 27 | Only low sodium, high water. No chlorothiazide |
| 32 | F | 51 | 190 | 170 | -20 | 115 | 100 | -15 | 68 | Only low sodium, high water. No chlorothiazide |
| 33 | F | 69 | 200 | 160 | -40 | 100 | 95 | -5 | 60 | |
| 34 | M | 41 | 170 | 150 | -20 | 110 | 95 | -15 | 11 | |
| 35 | M | 38 | 140 | 135 | -5 | 110 | 95 | -15 | 57 | |
| 36 | F | 56 | 220 | 200 | -20 | 140 | 125 | -15 | 2 | |
| 37 | M | 46 | 190 | 145 | -45 | 110 | 95 | -15 | 20 | Rise in pressure with each self-discontinuation of treatment |
| 38 | M | 50 | 180 | 160 | -20 | 110 | 90 | -20 | ? | Rise in pressure with self-discontinuation of treatment |
| 39 | M | 49 | 165 | 130 | -35 | 110 | 85 | -25 | 20 | |
| 40 | M | 57 | 155 | 140 | -15 | 110 | 85 | -25 | 19 | Patient discontinued only KCl, and pressure rose 180/90 |
| 41 | M | 64 | 220 | 150 | -70 | 110 | 85 | -25 | 31 | Heart failure disappeared |
| 42 | F | 52 | 200 | 155 | -45 | 100 | 85 | -15 | ? | |
| 43 | M | 44 | 200 | 140 | -60 | 130 | 90 | -40 | 20 | With 1 g. dietary NaCl pressure rose to 160/100 |
| 44 | M | 91 | 200 | 170 | -30 | 100 | 90 | -10 | 15 | |
| 45 | M | 48 | 260 | 140 | -120 | 150 | 80 | -70 | 70 | Failure of previous drug therapy |
| 46 | F | 69 | 180 | 138 | -42 | 110 | 95 | -15 | 40 | Patient decreased water intake, and pressure rose to 150/108 |
| 47 | M | 65 | 190 | 160 | -30 | 110 | 95 | -15 | 7 | |
| 48 | F | 55 | 180 | 140 | -40 | 120 | 90 | -30 | 14 | Mild constipation forced reduction of chlorothiazide |
| 49 | M | 47 | 200 | 130 | -70 | 120 | 80 | -40 | 14 | |
| 50 | M | 52 | 170 | 110 | -60 | 110 | 80 | -30 | 21 | |
| 51 | F | 52 | 170 | 170 | 0 | 110 | 90 | -20 | ? | |

TABLE II.—(Continued)

| Case | Sex | Age | Systolic pressure | | | Diastolic pressure | | | Time (days) | Observations |
|------|-----|-----|-------------------|-------|------------|--------------------|-------|------------|-------------|--|
| | | | B. T. | A. T. | Difference | B. T. | A. T. | Difference | | |
| 52 | M | 56 | 185 | 150 | -35 | 100 | 80 | -20 | 13 | Failure of previous drug therapy |
| 53 | M | 66 | 210 | 150 | -60 | 110 | 90 | -20 | 120 | |
| 54 | M | 60 | 170 | 170 | 0 | 100 | 70 | -30 | 30 | |
| 55 | F | 77 | 195 | 150 | -45 | 100 | 80 | -20 | 35 | Gradual but steady decrease of pressure in terms of months |
| 56 | M | 42 | 180 | 125 | -55 | 120 | 95 | -25 | 210 | |
| 57 | F | 50 | 210 | 140 | -70 | 110 | 80 | -30 | 12 | |
| 58 | F | 85 | 240 | 190 | -50 | 100 | 80 | -20 | 15 | |
| 59 | F | 64 | 190 | 140 | -50 | 110 | 90 | -20 | 15 | |
| 60 | F | 57 | 205 | 175 | -30 | 110 | 100 | -10 | 15 | |
| 61 | M | 26 | 170 | 130 | -40 | 120 | 85 | -35 | 8 | |
| 62 | M | 62 | 170 | 140 | -30 | 105 | 90 | -15 | 7 | |
| 63 | M | 58 | 190 | 180 | -10 | 110 | 90 | -20 | 7 | |
| 64 | F | 69 | 200 | 175 | -25 | 105 | 90 | -15 | 6 | |
| 65 | M | 65 | 185 | 130 | -55 | 95 | 80 | -15 | 10 | |
| 66 | M | 54 | 190 | 150 | -40 | 110 | 80 | -30 | 12 | |
| 67 | F | 65 | 220 | 190 | -30 | 120 | 110 | -10 | 12 | Disappearance of ECG signs of subendocardial injury. Moderate improvement of retinopathy |
| 68 | M | 58 | 220 | 125 | -95 | 140 | 80 | -60 | 13 | |
| 69 | F | 62 | 270 | 140 | -130 | 140 | 80 | -60 | 25 | |
| 70 | F | 58 | 200 | 170 | -30 | 120 | 90 | -30 | 15 | Hypothyroidism. Purpura probably due to chlorothiazide |
| 71 | F | 37 | 220 | 190 | -30 | 120 | 100 | -20 | 10 | |
| 72 | M | 39 | 125 | 120 | -5 | 100 | 70 | -30 | 7 | |
| 73 | F | 55 | 195 | 145 | -40 | 110 | 90 | -20 | 8 | Heart failure disappeared. Diabetic |
| 74 | M | 74 | 200 | 140 | -60 | 105 | 80 | -25 | 15 | |
| 75 | F | 39 | 210 | 140 | -70 | 130 | 95 | -35 | 10 | |
| 76 | F | 39 | 185 | 130 | -55 | 110 | 85 | -25 | 13 | Purpura, probably due to chlorothiazide. Phæochromocytoma? under investigation |
| 77 | F | 36 | 170 | 110 | -60 | 95 | 70 | -25 | 7 | |
| 78 | M | 31 | 150 | 155 | +5 | 105 | 100 | -5 | 6 | |
| 79 | M | 62 | 200 | 170 | -30 | 120 | 100 | -20 | 9 | Malignant hypertension with drop in pressure under therapy, patient rapidly developed uræmia and expired |
| 80 | M | 53 | 200 | 140 | -60 | 120 | 70 | -50 | 15 | |
| 81 | M | 23 | 230 | 160 | -70 | 150 | 100 | -50 | 15 | |
| 82 | M | 66 | 160 | 110 | -50 | 110 | 80 | -30 | 14 | Latent chronic glomerulonephritis |
| 83 | F | 53 | 220 | 180 | -40 | 110 | 85 | -25 | 14 | |
| 84 | F | 50 | 180 | 150 | -30 | 110 | 90 | -20 | 8 | |
| 85 | F | 40 | 200 | 165 | -35 | 105 | 90 | -15 | 8 | Toxæmia of pregnancy. Uneventful delivery |
| 86 | F | 72 | 200 | 145 | -55 | 110 | 70 | -40 | 10 | |
| 87 | F | 25 | 170 | 135 | -35 | 130 | 90 | -40 | 10 | |
| 88 | M | 49 | 185 | 125 | -60 | 115 | 80 | -35 | 12 | Disappearance of angina |
| 89 | M | 55 | 180 | 150 | -30 | 100 | 90 | -10 | 13 | |
| 90 | F | 74 | 185 | 150 | -35 | 105 | 85 | -20 | 5 | |
| 91 | M | 52 | 170 | 135 | -35 | 110 | 90 | -20 | 7 | No response |
| 92 | M | 59 | 210 | 145 | -65 | 115 | 95 | -20 | 6 | |
| 93 | M | 75 | 180 | 190 | +10 | 100 | 110 | +10 | 13 | |
| 94 | F | 57 | 210 | 140 | -70 | 115 | 80 | -35 | 10 | |
| 95 | M | 60 | 170 | 135 | -35 | 100 | 90 | -10 | 8 | |
| 96 | F | 51 | 205 | 130 | -75 | 120 | 80 | -40 | 8 | |
| 97 | F | 52 | 185 | 140 | -45 | 110 | 85 | -25 | 7 | Toxæmia of pregnancy 8th month. Initial water intake was intravenous |
| 98 | F | 23 | 200 | 130 | -70 | 140 | 80 | -60 | 15 | |
| 99 | M | 43 | 200 | 160 | -40 | 120 | 80 | -40 | 10 | |
| 100 | F | 55 | 230 | 180 | -50 | 120 | 80 | -40 | 17 | Serum Na fell to 112 mEq./l. Pt. extremely asthenic, but urinary output remained high |

KEY TO ABBREVIATIONS

B. T. = before therapy

A. T. = after therapy

TABLE III.
EFFECT OF THE REGIMEN ON SYSTOLIC AND DIASTOLIC
PRESSURES IN AMBULATORY HYPERTENSIVE PATIENTS.
(100 cases)

| | MEAN Systolic pressure | MEAN Diastolic pressure |
|----------------------------|---------------------------|----------------------------|
| Before therapy | 199.90 | 117.00 |
| After therapy | 155.90 | 92.10 |
| Mean of difference | 47.30 | 27.40 |
| Standard error of the mean | 2.26 | 1.31 |
| t | 18.41* | 15.66* |
| p | < 0.01 | < 0.01 |

* Statistically significant

The electrolyte status of the patients varied little. With the rigid sodium restriction, the levels of sodium rarely fell below 130 mEq./l. In one case (Case 90) it fell to 112 mEq./l., and the patient developed marked asthenia but maintained a diuresis of two litres of urine daily. His general status was improved by the administration of salt, which elevated his reduced pressure very little.

In the majority of the cases the decrease in the pressure began quickly in the first two or three days of therapy; occasionally this fall was marked. In the next few days the pressure gradually decreased until by day 4 to day 15 the low plateau was reached, with little fluctuation thereafter. In some cases the pressure showed a tendency to increase in spite of the rigid continuation of treatment (Case 56).

Similar results have been reported recently² with the use of a low-sodium, high-potassium diet, bed rest and chlorothiazide but no high intake of water. Our patients were for the most part ambulatory, and thus the factor of bed rest is much less important.

Results in Angina Pectoris

Using as our criterion the disappearance or diminution of cardiac pain, as has been proposed by Levine,⁵⁵ we may state that our program was of benefit to all of the 34 cases of our series.

Five patients and possibly six presented with cardiac insufficiency and four with hypertension. Of great interest was the patient (Case 25) who had global cardiac insufficiency and severe angina even while at rest, secondary to luetic aortic insufficiency. He was given 150 mg. of iproniazid daily for seven days, with no alleviation of the frequency or intensity of his pain. The subsequent use of our regimen resolved the signs of cardiac insufficiency and resulted in complete disappearance of his angina while at rest. The angina was, however, still present as he returned to physical activity but was then controlled with 100 mg. of iproniazid daily. It should be noted that relief of pain did not parallel improvement of the insufficiency or decrease in blood pressure in all cases. In Case 2, for example, the angina disappeared completely, while there was no change in the diastolic pressure.

The results were rather surprising in the 24 patients who did not have cardiac insufficiency or hypertension with the anginal syndrome. These included one case with a double aortic lesion and one with an aneurysm of the sinus of Valsalva. The benefit was frequently dramatic and occurred within a few days of the onset of therapy, and was maintained as the patient adhered to the therapy. In Cases 22 and 23 there was reappearance of slight pain as the patients increased their physical activity. Exercise tests were not done in a sufficient number of cases to enable us to draw any conclusions.

The large number of factors that may influence the frequency and intensity of anginal pain cause great difficulty in the evaluation of any type of therapy, be it surgical or medical. In our patients several were at absolute bed rest, while the remainder were ambulatory; thus with different degrees of activity it is not a homogeneous group. We may look on these results as only preliminary and tentative. They must be tested by a larger more carefully controlled series of cases. However, clinically the results are sufficiently impressive that we may suggest that the low-salt, high-water, high-potassium and chlorothiazide regimen may be of benefit in the management of the anginal syndrome.

GENERAL DISCUSSION

Possible Mechanism of Action in Cardiac Insufficiency

Many studies, such as those of Gamble³² and of Stewart and Rourke,⁸³ have demonstrated that the administration of a large quantity of water to healthy subjects produces a diuresis which is larger in volume than the amount of liquid ingested. Wolf⁹³ gave healthy subjects water every half hour in amounts corresponding to an intake of 6.10 c.c. per minute and found that the volume of urine excreted was 8% more than the volume of ingested water. This worker concluded that the administration of water without electrolytes had a dehydrating effect, probably because of the excretion of salt with the diuresis. Schemm⁷⁵⁻⁷⁷ has reported good results in the treatment of congestive cardiac insufficiency by the use of a moderate low-salt regimen combined with forcing the ingestion of 5 litres or more of water daily. Subsequent investigations of Wolf⁹⁴ and of Gorham *et al.*³⁴ showed that in order to obtain an optimum negative balance of sodium and water it was not necessary to use such large volumes of fluid. According to these authors, the loss of sodium and water from patients with congestive cardiac insufficiency, who are taking one gram of sodium per day, was maximum when the ingestion of water was 3000 c.c. daily; the ingestion of more water did not increase the loss of sodium and water, and the ingestion of less water decreased such losses. Moreover, these authors believed that the basic consideration was not only the volume of water ingested but the relation

TABLE IV.—RESULTS IN ANGINA PECTORIS.

| Case | Sex | Age | Intensity and frequency of pain | | Loss of weight (lb.) | Time (follow-up) days | Observations |
|------|-----|-----|---------------------------------|-------|----------------------|-----------------------|---|
| | | | Before | After | | | |
| 1 | M | 60 | +++ | + | 10 | 1 year | ASHD |
| 2 | F | 66 | +++ | 0 | — | 180 | HHD. B.P. 210/100; after, 180/100 |
| 3 | F | 60 | +++ | 0 | 20 | 60 | ASHD |
| 4 | M | 62 | ++++ | + | — | 195 | ASHD |
| 5 | M | 66 | +++ | 0 | 7 | 120 | ASHD |
| 6 | M | 60 | ++++ | 0 | — | 180 | ASHD |
| 7 | F | 49 | +++ | + | — | 45 | CAD |
| 8 | M | 55 | +++ | 0 | 2.5 | 90 | CAD |
| 9 | M | 43 | +++ | ++ | 23 | 150 | CAD. Chronic alcoholism |
| 10 | M | 42 | +++ | + | 5 | 225 | CAD |
| 11 | F | 66 | ++++ | 0 | — | 90 | HHD. Old MI |
| 12 | M | 50 | ++++ | + | — | 10 | CAD |
| 13 | M | 54 | ++ | 0 | — | 4 | CAD |
| 14 | M | 58 | +++ | 0 | — | 18 | CAD |
| 15 | F | 61 | ++++ | ++ | — | 30 | CAD |
| 16 | M | 45 | ++++ | + | — | 7 | CAD |
| 17 | F | 64 | +++ | 0 | — | 14 | CAD |
| 18 | M | 57 | +++ | + | — | 45 | CAD |
| 19 | M | 54 | +++ | 0 | — | 30 | CAD |
| 20 | M | 58 | ++ | 0 | 11 | 30 | ASHD. HHD. CHF |
| 21 | F | 58 | +++ | 0 | 2.5 | 60 | Old MI. CHF |
| 23 | M | 71 | +++ | + | 12.5 | 90 | CHF. Obesity |
| 24 | F | 53 | ++ | 0 | 2.2 | 30 | Old MI. CHF |
| 25 | F | 65 | ++++ | + | 12 | 120 | Luetic aortitis. AI. CHF. The angina disappeared completely with iproniazid 100 mg. daily |
| 26 | M | 57 | +++ | 0 | 4 | 90 | CAD. Heparin intramuscularly |
| 27 | M | 35 | ++++ | + | — | 120 | CAD. Persistent presystolic gallop rhythm |
| 28 | M | 63 | +++ | + | — | 12 | HHD. 170/110, 150/90 |
| 29 | M | 66 | +++ | + | 6 | 30 | CAD. Diabetes |
| 30 | F | 35 | +++ | + | 8 | 20 | DAL |
| 31 | M | 56 | ++ | 0 | — | 20 | CAD |
| 32 | M | 40 | ++ | 0 | 3 | 10 | CAD |
| 33 | M | 63 | +++ | 0 | — | 20 | CAD |
| 34 | M | 43 | +++ | + | 2 | 120 | Aneurysm of sinus of Valsalva |

KEY TO ABBREVIATIONS

ASHD = arteriosclerotic heart disease

HHD = hypertensive heart disease

CHF = congenital heart failure

MI = myocardial infarction

+ = Mild pain on walking

++ = Moderate pain on exertion and walking

+++ = Pain after eating and marked pain on walking

++++ = Pain at rest (nocturnal) or episodes of severe recurrent angina

0 = No pain during the treatment in usual activities

AI = aortic insufficiency

CAD = coronary artery disease

DAL = double aortic lesion

BP = blood pressure

between salt and water intake, in that the sodium ingested was reduced significantly while the above-mentioned level of water intake was maintained.

On the other hand, the marked restriction of the ingestion of water has been questioned by numerous authors.^{17, 53, 78} Thus the majority of physicians and cardiologists permit patients with cardiac failure to take liquids *ad lib*. The intake is then dependent on the sensation of thirst which, varying from patient to patient, may be depressed owing to cardiac failure, and is influenced by habit, general physical condition, etc. This usually means, in our experience, that the ingestion of liquids is much less than the requirement for the optimum elimination of the retained sodium and water.

In regard to the use of potassium in our regimen, it should be noted that considerable evidence has

been accumulated to indicate that in cardiac failure there is usually an intracellular deficit of potassium, even though the levels of serum potassium seem normal.^{20, 51, 82, 84, 85} In our cases we frequently encountered electrocardiographic signs suggestive of hypopotassæmia with normal serum levels of this cation. Thus we have come to the viewpoint that the administration of potassium chloride in conjunction with the low-sodium, high-water regimen not only substitutes for the potassium loss due to the diuresis and that due to the use of chlorothiazide, but also protects against the potassium deficit which could be an important factor in congestive cardiac insufficiency.

Furthermore, we feel that the generally accepted low normal values of serum potassium between 3.5 and 4.2 mEq./l. should be considered as repre-

senting a relative hypopotassaemia for the conditions under discussion and calling for supplementary administration of potassium chloride. Thus with values as given above for serum potassium we have often seen the appearance of various arrhythmias (extrasystoles, paroxysmal tachycardias) which subsequently disappear when we increase the dosage of potassium chloride, and raise the level of serum potassium to higher than 4.2 mEq./l.

Selye⁷⁹ has experimentally demonstrated in animals that a high intake of sodium salts and of corticosteroids can provoke cardiac necrosis, which can be prevented by the administration of potassium or magnesium. Thus cardiac insufficiency, associated as it is with retention of sodium and decrease of potassium (intracellular), as well as being a "stress situation" which causes excess adrenal activity, is, at least theoretically, fertile ground for the production of the type of infarct and damage that Selye has experimentally observed.

The mechanism or mechanisms of action that allow for the successful use of the low-sodium, high-water intake regimen in cardiac insufficiency are not completely clear. Indeed the factors controlling the flux of water and electrolytes in this condition are very complicated and poorly understood. Any discussion concerning the mechanism of action can only be in terms of probabilities and speculations, and not in terms of certainties.

We know, however, that the kidney plays a fundamental role in the regulation of salt and water in the organism. The kidney in turn is influenced by various endocrine factors, particularly the antidiuretic hormone of the posterior pituitary gland (ADH) and the adrenal hormones, especially aldosterone.

ADH is one of the continuous regulators of water balance of the body¹³ and probably acts chiefly on the distal tubules of the kidney, and as Smith³⁹ has shown, governs the "facultative reabsorption" of water. Its absence produces the clinical picture of diabetes insipidus. The primary stimulus for the production of ADH, as Verney⁸⁸ so brilliantly demonstrated, is the increase in osmotic pressure of the plasma, which specifically affects the osmo-receptors of the internal carotid. This is most concisely stated by Elkinton and Danowski:²⁶ "The absorption of several hundred cubic centimetres of ingested water at a time when body stores are intact will dilute body fluids. Such a decrease in osmotic pressure or tonicity of the body fluids will be registered in the osmo-receptors and less ADH is elaborated and the excess water as a consequence is eliminated via diuresis. A similar sequence of events will follow the administration of artificial extracellular fluid, suggesting that there are receptors which also detect changes in the volume of the body fluids. On the other hand, with water restriction the concentration of body solutes rises and the volume of body water diminishes as the consequence of continuous losses of water via the lungs, skin, bowel, and kidney. An

increased supply of ADH then becomes available and marked reabsorption of glomerular filtrates ensues. The volume of urine decreases and its specific gravity becomes high."

This sequence of exquisite adjustments between response and stimulus, that occurs in the normal subject is a good example of what is spoken of as a "negative feed-back system". Notwithstanding, there is no unanimity of opinion in respect of the role that ADH plays in cardiac insufficiency. Black¹³ believes that ADH is probably elevated during the active phase of retention of water as oedema, but that it does not operate continuously during the stable phase of the oedematous condition.

The studies of Leaf and his colleagues,⁵² as well as Weston and co-workers,⁹⁰ suggest that in cardiac insufficiency there exists a new equilibrium between the volume and composition of the body water mediated by antidiuretic substances in which ADH participates.⁹² It is possible from this evidence to suggest further that the administration of appropriate amounts of water may affect this new equilibrium, diminish the stabilized production of ADH, and thereby facilitate a diuresis of water. The hyperproduction of ADH in the low-salt syndrome is not at variance with the above suggested hypothesis, for this syndrome appears to represent a "resetting" of the osmo-receptor renal response mechanism at a new low level and therefore is different from the situation that usually obtains in cardiac insufficiency.²⁶ The hyponatraemia of the low-salt syndrome has been attributed to a primary diminution of the intracellular osmotic pressure which in some way reduces the extracellular tonicity to a subnormal level so that it may conform to that of the intracellular space. In this situation there may have been a previous substantial loss of potassium from the cells and in some cases the administration of potassium alone has elevated the level of serum sodium.¹⁰ It seems possible that the absence of patients in our series who developed the low-salt syndrome after long periods of salt restriction, may be due in part to the fact that we gave supplementary doses of potassium.

In regard to the role of aldosterone in the regulation of body water and electrolytes in cardiac insufficiency, it may be stated that it seems to be more important than ADH.

Many workers have confirmed that in oedematous conditions there is a great increase in the excretion of aldosterone which is presumably responsible for the excessive reabsorption of sodium and thus the retention of water.⁵⁷ However, it is not known what the primary stimulus is that produces the "secondary hyperaldosteronism" of cardiac insufficiency, or the mechanism by which haemodynamic changes may influence the adrenal glands.³⁷

There is sufficient evidence that secretion of aldosterone is in some way regulated by the levels of electrolytes and water of the body. In man reducing the amount of sodium intake, as by a low-

salt diet, mediates an increase in the secretion of aldosterone. Some workers have found that restriction of sodium in man, and also in the dog, even though it is accompanied by a fall in the concentration of serum sodium, results in only a slight change in the production of aldosterone, unless potassium is added to the diet.¹⁰ However, other workers consider that the principal factor in the secretion of aldosterone is not only the electrolytic status but the changes in the volume of body water, particularly the extracellular fluid volume.⁹ Acute depletion of sodium accompanied by a loss of water causes an increased production of aldosterone. If changes in the volume of body fluid are avoided by the administration of water, only minor alterations in the production of aldosterone are observed.^{11, 56, 63}

Thus the beneficial effect of the administration of significant amounts of water as we propose, in association with a true low sodium diet, may be due to the avoidance of rapid contraction of the extracellular fluid space, thereby preventing the increase of and even decreasing the production of aldosterone. This ultimately then favours the continuing diuresis of water and sodium.

Arterial Hypertension

The restriction of salt in the diet was alluded to as far back as the beginning of this century by Ambard and Beaujard.^{7, 8} These workers erroneously concluded that the retention of chloride was responsible in some cases for the elevation of the pressure and in others for the retention of water and oedema. Subsequently other workers^{14, 58, 70} demonstrated that the ion responsible for the retention of water was sodium and not chloride. It was the common practice in French and German clinics to restrict the dietary intake of salt as part of the treatment of various cardiovascular diseases including arterial hypertension.

Allen and his collaborators⁴⁻⁶ introduced the low sodium diet in the United States for the treatment of arterial hypertension and reported excellent results in cases of severe hypertension. However, the negative reports of other investigators^{12, 26, 62, 65} discouraged the use of this diet until the works of Kempner were published.⁴¹⁻⁴⁶ He introduced the rice and fruit diet and reported very good results in severe hypertension. This stimulated considerable investigation concerning the role of diet in hypertension and particularly that of sodium. Subsequent research³¹ demonstrated that the hypotensive effect of the diet used by Kempner was fundamentally due to the low sodium content. The evidence that sodium restriction significantly decreases high levels of arterial pressure in hypertensive individuals is almost unequivocal and does not require amplification. Furthermore, the decrease in the arterial pressure frequently observed in obese hypertensives who reduce their weight, has been attributed²⁴ recently not to the weight reduc-

tion but rather to the restriction of salt that goes along with a weight-reducing diet.

The administration of desoxycorticosterone acetate (DOCA) and salt has been a standard method of producing hypertension in animals for some time.^{49, 80} Increased intake of dietary salt and fluid restriction (the use of hypertonic saline as the basic fluid ingested) produces hypertension in chickens⁵⁴ and rats^{36, 73} without the use of supplementary corticosteroids. Finally, Meneely *et al.*^{60, 61} demonstrated that the chronic ingestion of excessive amounts of sodium chloride produces a pathological picture in rats similar to that seen in human hypertension.

It is well known that the hypertensive patients who respond to this restriction will manifest a rise in arterial pressure if salt is added to the diet.^{67, 89} Normotensive adults who have been given increased amounts of salt for short periods of time have not shown consistent elevation of arterial pressure,²² and in diabetic children ingestion of salt has been shown to elevate arterial pressure rapidly.⁶⁶ Dahl²³ has suggested that since essential hypertension is rare before 40 years of age and since salt is an etiological factor, its effect depends on the duration of excessive ingestion. Data obtained from another field, that of epidemiology, though limited, also suggest the importance of sodium as an etiological factor in essential hypertension. The basic studies of Love^{56a} demonstrated that people with low levels of salt ingestion have an incidence much lower than average. The studies of Dahl²³ summarize statistical and epidemiological viewpoints which have shown that the incidence of arterial hypertension is closely correlated with the amount of salt ingested by the groups of humans studied. These investigations provided data which allow the conclusion that the excessive ingestion of salt over a long period of time is very probably a causal factor of great significance.

Certainly many studies that can be cited suggest that the retention of sodium plays an etiological role in arterial hypertension and leads one to ask a question which was alluded to in the initial hypothesis of Ambard and Beaujard.⁸ Why can many normal subjects tolerate large quantities of sodium chloride without changes in arterial pressure and why in conditions in which there is marked retention of sodium, such as cardiac insufficiency, lipoid nephrosis, and chronic hepatitis, is there no accompanying arterial hypertension?

There are observations which may allow for a hypothesis to explain this problem. It has been known for a long time that the capacity of the kidney to conserve water is altered in essential hypertension.^{47, 48} Even though the hypertensive kidney retains its ability for "economy of water" (free water saved for the organism), this capacity is less than normal.¹⁸ The water economized for the body, in relation to sodium as well as chloride, is less in hypertensives than in normals.^{21, 35} That is to say, the hypertensive eliminates these ions as

rapidly as or even more rapidly than normal subjects, but in so doing uses and therefore excretes more water. These same findings are encountered in rats with experimental hypertension;^{16, 28, 68} the amount of antidiuretic hormone in the urine is increased,²⁷ and the concentration of serum sodium is also slightly elevated.^{3, 38, 50} Thus Sapirstein⁷⁴ proposed the theory that the fundamental difficulty in hypertension was not the simple retention of sodium, but the inability of the organism to maintain a normal osmolarity because the capacity of the kidney to retain water is decreased. The hypertension is not produced by the excess of sodium but in reality by the deficit of water and the consequent increase of the osmolarity of the body fluids. We believe that it is of great value to quote the conclusions arrived at by Sapirstein:⁷⁴

"This working hypothesis would imply that an excessive consumption of sodium chloride can induce the hypertensive state if, and only if, there is at the same time a failure to adjust body water to body sodium. In this view, the intake of sodium is of less importance than the relationship between sodium balance and water balance. Abnormal metabolism of water—for example, excessive losses of free water in sweating, or habitual disregard of thirst—may be more significant in the pathogenesis of hypertension than abnormal intake of the sodium ion. In the same way, it is quite conceivable that the favourable effects of the low salt diet are more directly referable to the removal of the osmolar load on the body-water than to any specific effect of sodium.

"Perhaps the most intriguing aspect of the proposed hypothesis is that, if it is correct, it may add an important new substance to the medical armamentarium against hypertension, namely water. If the basic deficiency in hypertensive disease is hyperosmolarity of the body fluids, generated either through renal inability to save 'free water' for the body or through any combination of these, the rational remedy would appear to be increased consumption of tap water. *To my knowledge, there have been no studies made on this point.*"

In keeping with these conclusions, our results of the treatment of arterial hypertension with a low-sodium, high-water regimen and small doses of chlorothiazides are superior to those reported by other authors^{15, 30} who use chlorothiazide alone.

However, we believe that precise comparative studies are required to prove or disprove this interesting and important hypothesis.

Angina Pectoris

Our results with the proposed program in patients with angina pectoris have been much better than we would have expected prior to investigation. The decrease or disappearance of pain has been a fairly constant finding. Of course, the complete mechanism of the production of cardiac pain is not clearly understood. The older clinicians^{19, 87, 91} accepted the theory of angina offered by Jenner

and Parry⁴⁰ at the end of the eighteenth century, particularly in relation to decubitus angina, where they related it to insufficiency of the left ventricle. This concept seems to have been overlooked or discarded by the majority of investigators who have dealt with the difficult problem of angina pectoris. However, Gold³³ has recently called attention to the effective treatment of cardiac pain by mercurial diuretics, particularly in patients in whom it occurs with the assumption of the reclining position. These patients did not have clinically demonstrable pulmonary congestion, but had worsening of symptoms on exertion and no improvement unless they lost weight with the mercurials. Gold's summary³³ is of great pertinence to our discussion: "Not all patients respond but some do in a dramatic way. I have the impression that the pain in those patients who also have exertional dyspnoea or nocturnal dyspnoea is more apt to respond well. Because of a clear-cut relationship between the relief of dyspnoea and the pain by dehydration in some cases which have both symptoms, I am inclined to think that in some cases cardiac pain is the sole clinical manifestation of left heart failure. If you treat them as cases of left heart failure their capacity for exertion without pain is enhanced, and nocturnal pain may either lessen or vanish." These results were also confirmed by Soloff⁸¹ and by Paul,⁶⁹ and more recently similar findings have been reported with the use of chlorothiazide.⁵⁹

The investigations of Muller and Rorvich⁶⁴ help to clarify some of the haemodynamic changes that occur during an attack of angina. These workers catheterized the right heart of patients with angina who had normal blood pressures and heart size and no evidence of cardiac insufficiency. Some of the patients had previous myocardial infarction but others did not. All had angina pectoris. During the absence of pain the haemodynamic data were almost normal, but during the attacks of pain induced by exercise, they encountered a surprising elevation of the pulmonary capillary pressure which they felt was due to left ventricular insufficiency. This was seen not only in the patients who had pain induced by exercise but also in a patient whose pain appeared spontaneously without exercise during catheterization. The administration of nitroglycerine prevented not only the pain but also the signs of left ventricular insufficiency after exercise.

The difficulty of determining the exact effect of a therapeutic program on the course of angina pectoris is well known. But we feel that our results have been so consistent that it is not out of place to speculate on the possible mechanisms. Further carefully controlled studies are needed. Our results would suggest that the theory of Rabb, who considers that anginal attacks are produced by an excess liberation of catecholamines which cause anoxia of the myocardium, is correct. He found that the effect of the catecholamines was potentiated by thyroid hormone as well as by a high

content of intracellular sodium. Thus he stated that high intracellular sodium potentiated the vasoconstrictor action of extrinsic or intrinsic catecholamines and that a decrease in intracellular sodium weakens this action.⁷¹ Other workers²⁹ have shown that the muscular tone of the blood vessels is related to the extra-intracellular gradient of sodium—as the gradient decreases with an increase of intracellular sodium, the contractile capacity of the musculature of the vessels increases. Also, Tobian⁸⁶ found an increase in water and sodium content in the aorta of experimental hypertensive animals.

Thus we suggest that the low-sodium, high-water regimen when combined with chlorothiazide produces a diuresis of water and sodium and reduces the work load of the heart, thereby improving the status of the left ventricle particularly. This would then eliminate the factor of cardiac insufficiency which we discussed. At the same time these changes of water and sodium balance would tend to modify favourably the responsive capacity of the coronary arteries as well as the myocardial fibres to the hormonal factors operative. These two modes of action would account for the success of the program in many of the anginal patients. Finally, the use of potassium is justifiable in the light of Selye's work⁷⁹ in which he showed its protective role for the myocardium against the chemical factors which experimentally produce cardiac necrosis.

SUMMARY

The results of treatment of patients with cardiac insufficiency, arterial hypertension and angina pectoris by a low-sodium, high-water, high-potassium regimen have been presented. In the light of the evidence from the literature that has been reviewed, it is suggested that a revision of some of the therapeutic concepts for cardiovascular conditions may be in order. It would appear that rigid sodium restriction may not be enough in the majority of cases, but that administration of potassium as well as large amounts of water may also be necessary. As Sapirostein⁷⁴ has so succinctly pointed out, water is not merely an inert portion of the diet of the patient but is a part of the therapeutic armamentarium and should be regarded as a drug to be taken in specified required doses.

The excellent results obtained in the treatment of angina pectoris suggest anew to the clinician that a relationship exists between cardiac insufficiency, electrolyte status of the myocardium and the status of the coronary tree.

Our knowledge of the basic mechanisms involved in the success of this program is limited, as is knowledge in many areas of cardiovascular physiopathology. Further work with clinical as well as experimental approaches is needed in order to clarify and qualify our concepts.

It is hoped that this preliminary report will serve to stimulate further investigation of the mechanism of this regimen, and that it will be of use to the clinician in the everyday treatment of his cardiac patients, many of whom represent severe and refractory problems at the present time.

REFERENCES

1. ACEVES, S. AND CARRAL, R.: *Am. Heart J.*, 34: 114, 1947.
2. AGOTE POVEDA, I. P., ARIAS MARTINEZ, J. AND ALONSO LOMAS, L.: *Rev. Clin. Esp.*, 74: 28, 1959.
3. ALBERT, D. G., MORITA, Y. AND ISERI, L. T.: *Circulation*, 17: 761, 1958.
4. ALLEN, F. M.: *J. A. M. A.*, 74: 652, 1920.
5. ALLEN, F. M., MITCHELL, J. W. AND SHERRILL, J. W.: *Ibid.*, 75: 444, 1920.
6. ALLEN, F. M. AND SHERRILL, J. W.: *J. Metabol. Res.*, 2: 429, 1922.
7. AMBARD, L.: *Physiologie normale et pathologique des reins*, 31ème ed., Masson & Cie, Paris, 1931.
8. AMBARD, L. AND BEAUJARD, E.: *Arch. gén. de méd.*, 1: 520, 1904.
9. BARTTER, F. C. et al.: *J. Clin. Invest.*, 35: 688, 1956.
10. BAYLISS, R. I. S.: In: *Modern trends in endocrinology*, edited by H. Gardiner-Hill, Butterworth & Co. Ltd., London, 1958, p. 122.
11. BECK, J. C. et al.: *Arch. Int. Med.*, 96: 463, 1955.
12. BERGER, S. S. AND FINEBURG, M. H.: *Ibid.*, 44: 531, 1929.
13. BLACK, D. A. K.: In: *Modern trends in endocrinology*, edited by H. Gardiner-Hill, Butterworth & Co. Ltd., London, 1958, p. 96.
14. BLUM, A. AND VAN CAULAERT: Quoted by Fishberg, A. M., *op. cit.*, p. 160.
15. BORHANI, N. O.: In: *Hypertension*, first Hahnemann symposium on hypertensive disease, edited by J. H. Moyer, W. B. Saunders Company, Philadelphia, 1959, p. 549.
16. BRAUN-MENÉNDEZ, E.: In: *Hypertension: a symposium held at the University of Minnesota*, edited by E. T. Bell, University of Minnesota Press, Minneapolis, 1951.
17. BRIDGES, W. C., WHEELER, E. O. AND WHITE, P. D.: *New England J. Med.*, 234: 573, 1946.
18. BRODSKY, W. A. AND GRAUBARTH, H. N.: *J. Lab. & Clin. Med.*, 41: 43, 1953.
19. CLIFFORD, A.: Quoted by Levy, R. L.: In: *Am. Heart J.*, 4: 377, 1929.
20. CORT, J. H. AND MATTHEWS, H. L.: *Lancet*, 1: 1202, 1954.
21. COTTIER, P. T., WELLER, J. M. AND HOOBLER, S. W.: *Circulation*, 17: 750, 1958.
22. DAHL, L. K.: In: *Hypertension*, first Hahnemann symposium on hypertensive disease, edited by J. H. Moyer, W. B. Saunders Company, Philadelphia, 1959, p. 262.
23. DAHL, L. K. AND LOVE, R. A.: *J. A. M. A.*, 164: 397, 1957.
24. DAHL, L. K., SILVER, L. AND CHRISTIE, R. W.: *New England J. Med.*, 258: 1186, 1958.
25. DOLE, V. P. et al.: *J. Clin. Invest.*, 29: 1189, 1950.
26. ELKINTON, J. R. AND DANOWSKI, T. S.: *The body fluids*, Williams & Wilkins Company, Baltimore, 1955.
27. ELLIS, M. E. AND GROLLMAN, A.: *Endocrinology*, 44: 415, 1949.
28. EZROW, L. AND SAPIRSTEIN, L. A.: *Am. J. Physiol.*, 194: 436, 1958.
29. FRIEDMAN, S. M., JAMESON, J. D. AND FRIEDMAN, C. L.: *Circulation Res.*, 7: 44, 1959.
30. FINNERTY, F. A., JR. et al.: (Abstract) 31st Scientific Sessions of the Am. Heart Assn., *Circulation*, 18: No. 4, Part 2, 718, 1958.
31. FISHBERG, A. M.: *Hypertension and nephritis*, 5th ed., rev., Lea & Febiger, Philadelphia, 1954.
32. GAMBLE, J. L.: *Bull. Johns Hopkins Hosp.*, 61: 151, 1937.
33. GOLD, H.: *Treatment of coronary artery disease*, In: *Cornell Conferences on Therapy*, edited by H. Gold et al., Vol. 2, Macmillan Company, New York, 1947, p. 265.
34. GORHAM, L. W. et al.: *Ann. Int. Med.*, 27: 575, 1947.
35. GREEN, D. M. et al.: *Circulation*, 9: 416, 1954.
36. GROSS, F.: *Arch. internat. pharmacodyn.*, 81: 211, 1950.
37. HAMILTON, W. F.: *Experimental heart failure*, In: *Cardiology*, Vol. 4: *Clinical cardiology therapy*, edited by A. A. Luisada, Blakiston Division, McGraw-Hill Book Company, Inc., New York, 1959, p. 183.
38. HOLLEY, H. L., ELLIOT, M. C., JR. AND HOLLAND, C. M., JR.: *Proc. Soc. Exper. Biol. & Med.*, 77: 561, 1951.
39. SMITH, H. W.: *The kidney: structure and function in health and disease*, Oxford University Press London, 1951.
40. JENNER AND PARRY: Quoted by Estape, F. de A. La Angina de Pecho, Salvat Ed., Barcelona and Buenos Aires, 1943.
41. KEMPNER, W.: *North Carolina M. J.*, 5: 125, 1944.
42. Idem: *Ibid.*, 6: 61, 1945.
43. Idem: *Bull. New York Acad. Med.*, 22: 358, 1946.
44. Idem: *North Carolina M. J.*, 8: 128, 1947.
45. Idem: *Am. J. Med.*, 4: 545, 1948.
46. Idem: *Ann. Int. Med.*, 31: 821, 1949.
47. VON KORANYI, A.: *Ztschr. f. klin. Med.*, 33: 1, 1897.
48. Idem: *Ibid.*, 34: 1, 1898.
49. KNOWLTON, A. I. et al.: *J. Exper. Med.*, 85: 187, 1947.
50. KYLIN, E. AND ELMQUIST, H.: *Acta med. scandinav.*, 88: 507, 1936.
51. LARAGH, J. H.: *J. Clin. Invest.*, 33: 807, 1954.
52. LEAF, A. et al.: *Ibid.*, 32: 868, 1953.
53. LEEVY, C. M., STRAZZA, J. A. AND JAFFIN, A. E.: *J. A. M. A.*, 131: 1120, 1946.
54. LENEL, R., KATZ, L. N. AND ROBBARD, S.: *Am. J. Physiol.*, 152: 557, 1948.
55. LEVINE, S. A.: *Am. J. Cardiol.*, 1: 19, 1958.
56. LIDDLE, G. W. et al.: *J. Clin. Invest.*, 34: 949, 1955 (Abstract).
- 56a. LOVE, R. A.: Quoted by Dahl, L. K.²²
57. LUETSCHER, J. A. JR. AND JOHNSON, B. B.: *J. Clin. Invest.*, 33: 1441, 1954.
58. MAGNUS-LEVY: Quoted by Fishberg, A. M., *op. cit.*
59. MARSHALL, F. A.: *Am. J. Cardiol.*, 3: 180, 1959.
60. MENEELY, G. R. et al.: *J. Exper. Med.*, 98: 71, 1953.
61. MENEELY, G. R. et al.: *Am. J. Med.*, 16: 599, 1954.
62. MOSENTHAL, H. O.: *M. Clin. N. America*, 5: 1189, 1922.
63. MULLER, A. F., RIONDEL, A. M. AND MACH, R. S.: *Lancet*, 1: 831, 1956.

64. MULLER, O. AND RORVIK, K.: *Brit. Heart J.*, 20: 302, 1958.
65. MCLESTER, J. S.: *Am. J. M. Sc.*, 163: 794, 1922.
66. MCQUARRIE, I.: *Proc. Staff Meet. Mayo Clin.*, 10: 239, 1935.
67. O'HARE, J. P. AND WALKER, W. G.: *Arch. Int. Med.*, 32: 283, 1923.
68. OSTER, K. AND MARTINEZ, O.: *J. Exper. Med.*, 78: 477, 1943.
69. PAUL, O.: *M. Clin. N. America*, 35: 63, 1951.
70. PFEIFFER. Quoted by Fishberg, A. M.: *Hypertension and nephritis*. Lea & Febiger, Philadelphia, 1954.
71. RAAB, W.: *J. Mt. Sinai Hosp.*, 19: 233, 1952.
72. *Idem*: *Hormonal and neurogenic cardiovascular disorders*. Williams & Wilkins Company, Baltimore, 1953.
73. SAPIRSTEIN, L. A., BRANDT, W. L. AND DRURY, D. R.: *Proc. Soc. Exper. Biol. & Med.*, 73: 82, 1950.
74. SAPIRSTEIN, L. A.: *In: Hypertension*, first Hahnemann symposium on hypertensive disease, edited by J. H. Moyer, W. B. Saunders Company, Philadelphia, 1959, p. 273.
75. SCHEMM, F. R.: *Ann. Int. Med.*, 17: 952, 1942.
76. *Idem*: *Ibid.*, 21: 937, 1944.
77. *Idem*: *Lancet*, 66: 50, 1946.
78. SCHROEDER, H. A.: *Am. Heart J.*, 22: 141, 1941.
79. SELYE, H.: *Chemical prevention of cardiac necrosis*. The Ronald Press Co., New York, 1959.
80. SELYE, H., HILL, C. E. AND ROWLEY, E. M.: *Canad. M. A. J.*, 49: 88, 1943.
81. SOLOFF, L. A.: *J. A. M. A.*, 143: 225, 1950.
82. SQUIRES, R. D., CROSLLEY, A. P., JR. AND ELKINTON, J. R.: *Circulation*, 4: 868, 1951.
83. STEWART, J. D. AND ROURKE, G. M.: *J. Clin. Invest.*, 21: 197, 1942.
84. STOCK, R. J., MUDGE, G. H. AND NURNBERG, M. J.: *Circulation*, 4: 54, 1951.
85. TALSO, P. J., SPAFFORD, N. AND BLAW, M.: *J. Lab. Clin. & Med.*, 41: 405, 1953.
86. TOBIAN, L. AND REDLEAF, P. D.: *Am. J. Physiol.*, 192: 325, 1958.
87. VAQUEZ, H.: *Maladies du cœur*, Masson & Cie., Paris, 1921.
88. VERNEY, E. B.: *Proc. Roy. Soc. London (s.B.)*, 135: 25, 1947.
89. WATKIN, D. M. et al.: *Am. J. Med.*, 9: 428, 1950.
90. WESTON, R. E. et al.: *J. Clin. Invest.*, 32: 611, 1953.
91. WENCKEBACH, K. F.: *Wien. klin. Wchnschr.*, 41: 1, 1928.

92. WHITE, H. L., HEINBECKE, P. AND ROLF, D.: *Am. J. Physiol.*, 149: 404, 1947.
93. WOLF, A. V.: *Ibid.*, 143: 567, 1945.
94. *Idem*: *Ibid.*, 148: 54, 1947.

RÉSUMÉ

Les auteurs présentent les résultats de leur traitement de malades atteints d'insuffisance cardiaque, d'hypertension artérielle et d'angine de poitrine par un régime pauvre en sodium et riche en eau et en potassium. D'après les données de la littérature médicale, les auteurs suggèrent qu'une revision des conceptions thérapeutiques s'appliquant aux affections cardio-vasculaires est de mise. Il semble que la simple restriction rigide de sodium ne soit pas suffisante dans la majorité des cas, mais que l'on doive aussi administrer du potassium ainsi que de fortes quantités d'eau. Comme l'a fait remarquer Saperstein, l'eau ne constitue pas seulement une portion inerte du régime alimentaire de ces malades, mais elle fait partie de l'arsenal thérapeutique et doit être considérée comme un médicament dont la posologie n'est pas négligeable. Les excellents résultats obtenus dans l'angine de poitrine, soulignent de nouveaux aux yeux du clinicien le rapport qui existe entre l'insuffisance cardiaque, l'état électrolytique du myocarde et celui de l'arborescence coronarienne. Notre connaissance des mécanismes fondamentaux impliqués dans le succès d'un tel programme, est limitée, comme c'est le cas dans plusieurs champs d'activité physio-pathologiques cardio-vasculaires. Il faudra donc continuer le travail clinique et expérimental afin de clarifier et de délimiter nos concepts. Les auteurs espèrent que ce rapport préliminaire stimulera une recherche plus poussée des mécanismes mis en jeu par ce régime et aidera le clinicien à surmonter les obstacles, que présente souvent le traitement quotidien de malades atteints d'affections cardiaques.

TREATMENT OF THE MINOR EPILEPSIES*

JOHN A. SIMPSON, M.B., Ch.B.(Glasg.),
M.R.C.P., F.R.F.P.S., M.R.C.P.E.,
Edinburgh, Scotland

PETIT MAL, "the little illness"—a disparaging term, almost affectionate—is described as "a minor form of epilepsy" by the dictionary. So often in science, the simple and the commonplace hold the key that opens the door of knowledge. Understand petit mal and you understand epilepsy. It is for this reason that a close study of this "little disease" is worth making, and it is encouraging to reflect that there are more specific forms of therapy for this disorder than for other types—since a therapeutic trial is merely an experiment in chemical pathology.

It is then understandable that there should be obvious disappointment in the letter received by every neurologist: "Dear Doctor, this patient has petit mal, but shows no response to trimethadione." In the majority of instances it turns out that the patient does not have petit mal, but another of the minor epilepsies.

*Based on a paper presented to the Section of Neurology and Neurosurgery, B.M.A. - C.M.A. Joint Meeting, Edinburgh, July 24, 1959.

†Senior Lecturer in Neurology, Edinburgh University; Physician in Charge, Neurological Unit, Northern General Hospital, Edinburgh.

Before reviewing treatment, let me say a few words about "the minor epilepsies", for they are many; to their elucidation we acknowledge a tremendous debt to Dr. Wilder Penfield.

True petit mal is the characteristic type of a related group associated with neuronal discharges arising in the upper diencephalon and rapidly spreading to both hemispheres synchronously. The patient is usually a child who suddenly pales, becomes silent, looks vacant, with eyes staring or rolling up at a rhythmical three per second and, perhaps with fingers or hands twitching at the same rate, and then suddenly resumes the normal stream of consciousness without post-ictal disturbance. Related to this are simple "absences", slowing of reaction time, akinetic spells, petit mal with myoclonus and petit mal with automatism. The latter is not a common feature, yet it is epileptic automatism of other types that is most frequently erroneously described as petit mal.

Unlike the petit mal group proper, the other minor epilepsies are manifestations of a discharge arising from a limited area of cortex or subcortical tissue, without generalized propagation of the discharge. If the local sign of the disturbed area is motor or sensory, the true nature of this minor epilepsy as a "focal seizure" is readily apparent. If the local sign is a disturbance of thought or of the stream of consciousness or memory, it is much less obvious that the fit is of the same nature. The

source of discharge is then usually in the temporal or frontal lobe, or in the insular cortex. Many of these patients have a previous history of neonatal difficulties suggesting cerebral anoxia or trauma at birth, and close questioning often elicits symptoms suggestive of a focal seizure. The electroencephalogram (E.E.G.) confirms that the attacks are not "central" in type. The diagnosis of these common fits cannot be discussed here. One of these minor seizures is more probable than true petit mal when symptoms first arise in adult life, though it is not rare for childhood petit mal to continue in adulthood. For the former trimethadione is unlikely to help. At the other extreme, more could be said about the minor fits of infancy, especially the important group with jack-knife or "salaam" jerks associated with rapid dementia and a serious prognosis (with an E.E.G. picture termed "hypsarrhythmia" by Gibbs, Fleming and Gibbs⁶), since it may be that their early recognition and treatment with adrenocorticotrophic hormone (ACTH) may arrest the disease in some.¹³ Some non-epileptic disorders which may cause confusion are listed in Table I.

TABLE I.

| <i>Psychiatric</i> | <i>Syncopal</i> | <i>Non-epileptic paroxysms</i> |
|--------------------------------|--|--|
| Day-dreaming Breath-holding | Emotional faints Cardiovascular disorders | Migraine Vertigo— aural central Tetany— hyperventilation hypocalcaemia |
| Infantile masturbation | Anaemia | |
| Hysteria "Blackouts" | | |

Let me dismiss those minor epilepsies which are not of the petit mal type by saying that their treatment is by use of the usual anticonvulsants—phenobarbitone, diphenylhydantoin and primidone, and, in a few cases—as Professor Penfield has taught us—by surgical removal of the offending area of brain.

With regard to petit mal proper and its related fits, there is now a variety of preparations which are more or less effective. Some cases are resistant to all drugs yet tried, and nothing is gained by giving drugs which do not markedly reduce the number of attacks. Others have absences so rarely as not to require any treatment. For the remainder, the choice of a drug is difficult. There are two reasons for this. The first is the lack of a widely and long used preparation to provide a standard of comparison. The second is the long "carry-over" effect of most drugs effective in petit mal, for some time after they are withdrawn. This makes it difficult to judge the effect of a range of drugs on one patient.¹⁵

Whatever drug is selected should be pushed to the limit of tolerance before it is discarded. Some of the cases resistant to trimethadione do very well

TABLE II.

| <i>Group</i> | <i>Name of drug</i> | <i>Single dose mg.</i> | <i>Frequency* doses/day</i> |
|------------------------|---------------------------------|------------------------|-----------------------------|
| Oxazolidine-2:4-diones | Trimethadione | 300 | 3 - 7 |
| | Paramethadione | 300 | 3 - 10 |
| | Aloxidone | 300 | 1 - 2 |
| Succinimides | Phensuximide | 500 | 4 - 8 |
| | Methsuximide | 300 | 1 - 4 |
| | P.M. 671® | 250 | 4 - 8 |
| | P.M. 680® | 250 | 4 - 8 |
| Urea derivatives | Phenobarbitone | 30 | 2 - 8 |
| | Primidone | 250 | 2 - 6 |
| | Phenacemide | 500 | 3 - 6 |
| Enzyme inhibitors | Acetazolamide | 250 | 1 - 3 |
| | Ethoxzolamide | 125 | 1 - 4 |
| | Ephedrine | 15 | 1 - 4 |
| | Amphetamine | 10 | 1 - 2 |
| | Bellafoline with phenobarbitone | — | 1 - 6 |
| | Mepacrine | 50 | 2 |
| Propane-diols | Prenderol® | 500 | 4 - 20 |
| | Mephensin | 500 | 6 - 20 |
| | Meproamate | 400 | 3 - 6 |

*Children under 12 often require a daily dose in the lower range of the adult dose which is listed.

if the dose is increased. The dosage in Table II is that recommended by the pharmacopœia or manufacturer, but it may be inadequate and should be cautiously increased. Frequent blood and urine examinations are recommended (though there is little evidence that this type of toxicity is related to dose).

Oxazolidine-2:4-diones

The first drug with marked effect on petit mal, trimethadione (Tridione), is still the most widely used. Its congener paramethadione (Paradione) is similar in its action and toxicity. Slight drowsiness and a sensation of visual glare are the commonest reactions and rarely require withdrawal of the drug. Dermatitis, agranulocytosis or other blood dyscrasias, hepatitis and nephrotic syndrome are uncommon toxic effects requiring immediate withdrawal of the drug. Massive overdosage can be treated by pentamethylentetrazol (Metrazol). The response to an effective dose is a marked drop in the frequency of attacks, but sometimes this is preceded by a transient increase in seizure rate.⁶ Aloxidone (Malidone) is another of this group. It is said to cause less glare effect and to show lower toxicity, but may be less effective therapeutically. However, response is individual, and it is worth trying each in turn before rejecting the diones.

Succinimides

Pharmacological studies suggest that drugs of this group should be effective in the treatment of petit mal. British experience is almost limited to phensuximide (Milontin), which is a useful alternative to the diones though probably less effective and with similar toxicity (apart from the glare

phenomenon which is unique to the diones). Further compounds in the series are N-methyl-a, methylphenylsuccinimide (Celontin), which is more toxic,³ P.M. 680 and P.M. 671. Trolle and Kiorboe¹⁴ considered P.M. 680 to be superior to others, but the manufacturers state that reports available to them indicate that P.M. 671 is therapeutically superior and less toxic. Zimmerman and Burgemeister¹⁶ consider P.M. 671 (a-ethyl- a, methylsuccinimide) to be the most promising drug now available for the control of petit mal; like trimethadione, it tends to aggravate grand mal. It is unfortunate that side effects prevent full exploitation of the diones and succinimides. Other drugs used in the treatment of petit mal are much less effective, but they have a role as adjuvants, and indeed acetazolamide and mepacrine are sometimes effective alone.

Urea Derivatives

Phenacemide (Phenurone) is one of the most potent anticonvulsants* and sometimes the only effective drug in a case of resistant petit mal or myoclonic epilepsy. Unfortunately, it is also the most toxic and should not be prescribed unless extremely frequent minor spells make life quite impossible for the child and then only when close supervision is possible to detect early signs of liver damage. Phenobarbitone and primidone (Mysoline) help individual cases of petit mal but not the majority.

Enzyme Inhibitors

TABLE III.

| Drug | Enzyme inhibited |
|--------------------|------------------------|
| Acetazolamide..... | Carbonic anhydrase |
| Ethoxzolamide | " |
| Ephedrine..... | Amine oxidase |
| Caffeine | " |
| Amphetamine | " |
| Mepacrine..... | Cholinesterase, etc. |
| Atropine..... | Acetylcholine blockade |

Table III lists some miscellaneous drugs which have known enzyme-inhibition properties; the most prominent effects are listed but other enzyme systems may be affected and there is no evidence as to which property is important in the treatment of petit mal. The value of acetazolamide (Diamox) is still being assessed, but preliminary experience confirms early claims.⁹ Ethoxzolamide, a carbonic anhydrase inhibitor of roughly twice the potency of acetazolamide, appears to be valuable, though, like the other drugs in this group, it is best used as an adjuvant to a dione or succinimide.¹² Ephedrine, caffeine and amphetamine have been used in this way for several years. Belladonna had a reputation before the introduction of more selective and potent drugs caused its obscurity. It is worth a trial, in combination with phenobarbitone, before embarking on the use of the more toxic drugs.

Quinacrine or mepacrine was recommended for the treatment of petit mal by Spanish workers.¹ Miller¹⁰ in Edinburgh has confirmed the value of this drug in young children. My own experience with adolescents is not extensive and results have been conflicting. It has sometimes virtually abolished petit mal where no other drug has been effective, but in one patient the response lasted only two weeks and the return of petit mal was accompanied by major seizures of a severity not previously known in that patient. The role of mepacrine requires assessment, but there is no doubt that it can be beneficial. Kaufmann⁷ speaks favourably of chloroquine in the treatment of petit mal.

Propane-diols

Propane-diols show some slight action. Pren-derol® (2,2-diethyl-1,3-propanediol) has some anti-convulsant action² and mephenesin has been used in petit mal and in the closely related myoclonic epilepsy.⁸ Meprobamate may have a place as an adjuvant in the treatment of petit mal.¹¹ The drugs of this group are of limited value therapeutically and again tend to aggravate grand mal. With the last group, their importance lies in their usefulness as investigative tools since there is considerable understanding of their modes of action.

Amino Acids

Early claims for glutamic acid have not been confirmed. Results of trials of other amino acids are awaited.

The choice of drug depends on the ratio of therapeutic to toxic properties, but also on the possibly conflicting demands of treatment of other types of epilepsy which may co-exist—usually grand mal. Table IV attempts to grade toxicity although in the most arbitrary fashion, since personal experience is very limited with some of the drugs listed and published information is scanty or conflicting.

TABLE IV.—TOXICITY

| → | | | |
|----------------|----------------|---------------|--------------|
| Phenobarbitone | Paramethadione | P.M. 680® | Methsuximide |
| Acetazolamide | Aloxidone | Phensuximide | Phenacemide |
| Mepacrine | P.M. 671® | Trimethadione | |
| Primidone | | | |

Two groups of patients with petit mal are probably best left untreated: (1) children with few absences causing no interference with education, and (2) those with frequent attacks resistant to all drugs, when used alone or in combination and tried to the limit of toxicity. Nothing is then to be gained by running the risk of toxic reactions.

Petit Mal without Grand Mal

The drug favoured by most practitioners is trimethadione but the newer succinimides are said to be superior, particularly P.M. 671.^{15, 16} Acetazolamide or amphetamine may be added.

Frequent Petit Mal with Occasional Grand Mal

Where major fits are infrequent, the preferred routine may be used for petit mal, but it is advisable to add phenobarbitone, grain 1, at bedtime.

Petit Mal and Grand Mal both Frequent

In these circumstances both forms of seizure must be treated concurrently. Trimethadione is probably best avoided as it tends to potentiate grand mal. The combination of a succinimide (e.g., P.M. 671) and phenobarbitone would seem appropriate.

Infrequent Petit Mal with Frequent Grand Mal

Therapy should be concentrated on the major seizure and the infrequent minor attacks ignored. Primidone and phenobarbitone alone or in combination are satisfactory. Hydantoines (Phenytoin) have no worth-while effect on petit mal and may even aggravate it.⁵ I have not experienced this but it seems reasonable to use the alternatives suggested.

Finally, it is important to individualize treatment. The above suggestions offer a point of departure, but constant trial and error is necessary to achieve the best for each patient.

SUMMARY

Analysis of symptomatology and electroencephalographic tracings enables minor epilepsy to be divided into (a) minor epilepsy of local, cortical or sub-cortical origin, usually related to local morbid pathology, which is treated by the anticonvulsants used for major epilepsy, and (b) true petit mal and related centrencephalic seizures requiring specific drugs.

The types of drug now available are arbitrarily classified and ranged in order of toxicity.

Choice of drug depends on the relative severity of petit mal and concurrent grand mal. Suggestions are made for various circumstances, but it is necessary to experiment with drug and dosage (to the limit of toxicity) in each patient to obtain the best results.

REFERENCES

1. ARELLANO, A. P.: Proceedings of the 5th International Neurological Congress, Lisbon, 1954, p. 258.
2. BERGER, F. M. AND LUDWIG, B. J.: *J. Pharmacol. & Exper. Therap.*, 100: 27, 1950.
3. DOW, R. S., MACFARLANE, J. P. AND STEVENS, J. R.: *Neurology*, 8: 201, 1958.
4. GIBBS, E. L., FLEMING, M. M. AND GIBBS, F. A.: *Pediatrics*, 1: 66, 1954.
5. GOODMAN, L. S. AND GILMAN, A.: *Pharmacological basis of therapeutics*, 2nd ed., The Macmillan Company, New York, 1955.
6. GOODMAN, L. S., TOMAN, J. E. P. AND SWINYARD, E. A.: *Am. J. Med.*, 1: 213, 1946.
7. KAUFMANN, M.: *Harefuah* (Tel-Aviv), 54: 144, 1958.
8. KELLY, R. E. AND LAURENCE, D. R.: *Brit. M. J.*, 1: 456, 1955.
9. LOMBROSO, C. T., DAVIDSON, D. T., JR. AND GROSSI-BIANCHI, M. L.: *J. A. M. A.*, 160: 268, 1956.
10. MILLER, R. A.: *Scot. M. J.*, 3: 441, 1958.
11. PERLSTEIN, M. A.: *J. A. M. A.*, 161: 1040, 1956.
12. SOLOMON, S. AND HIRANO, A.: *Neurology*, 9: 167, 1959.
13. SOREL, L. AND DUSAUCY-BAULOYE, A.: *Acta neurol. psychiat. Belg.*, 58: 130, 1958.
14. TROLLE, E. AND KJØRBOE, E.: *Nord. med.*, 60: 1780, 1958.
15. ZIMMERMAN, F. T. AND BURGEMEISTER, B. B.: *J. A. M. A.*, 157: 1194, 1955.
16. *Idem*: *Neurology*, 8: 769, 1958.

RÉSUMÉ

L'analyse de la symptomatologie et des tracés de l'électroencéphalographie permet de classer l'épilepsie mineure en (A) épilepsie mineure d'origine locale, corticale ou sous-corticale, habituellement en rapport avec une lésion locale et qui est traitée par les anti-convulsants que l'on emploie dans l'épilepsie majeure; (B) le véritable petit mal ainsi que les convulsions centrencephaliques exigeant une thérapie spécifique. Les différents genres de médicaments dont on se sert couramment sont classifiés d'une façon arbitraire et par ordre de toxicité. Le choix du médicament dépend de la sévérité relative du petit mal et du grand mal qui peut y être associé. L'auteur offre des suggestions pour varier la thérapeutique d'après les circonstances mais il rappelle qu'il est nécessaire de modifier la médication et la posologie (jusqu'à limite de la toxicité) chez chaque malade afin d'obtenir les meilleurs résultats.

FRACTURES OF THE HIP:
IMMEDIATE VERSUS DELAYED
TREATMENT

P. F. MCGOEY, M.D., F.R.C.S.[C.], and
JOHN EVANS, M.D., F.R.C.S.[C.], Toronto

ARE WE GUILTY of a double standard of treatment of hip fractures?

Early splinting of fractures has been an accepted aim of treatment for centuries. In a teaching hospital, early definitive treatment of the highest quality affords the finest precept for students. This survey was undertaken to determine if the mortality figures in adult hip fractures of the neck and intertrochanteric areas have been improved by "emergency operations".

Seven hundred and thirty-seven consecutive, unselected patients with fractured hips admitted to St. Michael's Hospital in the ten-year period from January 1, 1948, to December 31, 1957, have been studied. All patients admitted during this period have been included in order to overcome objections which are frequently raised in such comparative studies. The survey was extended from five to ten years because of insufficient numbers to be statistically valid.

The spirited discussions about management of intertrochanteric fracture in the British medical literature¹⁻⁴ have emphasized some of the conflicts one encounters when reading the journals.⁵⁻⁷ We wish to consider at this time the single and most important factor—mortality, and the effect of an aggressive policy of treatment in both neck and trochanteric fractures.

METHOD AND MATERIAL

St. Michael's Hospital is a thousand-bed, down-town adult teaching hospital, treating emergencies of all types. Patients with a hip fracture were never refused admission and many admissions came from street accidents, institutions serving old-age pensioners, nursing homes, and smaller hospitals, as well as private physicians. Forty-four of these patients had pathological fractures. While admissions were received "around the clock", there was a divided opinion among our staff regarding the wisdom of immediate operation. One cannot dismiss human frailty and the distinct aversion to nocturnal surgery shared, not only by surgeons, but also by nurses and radiographers. Furthermore, at the beginning of this study in January 1948, although there was general agreement about nailing intracapsular fractures, there was some guarded enthusiasm about internal fixation of intertrochanteric fractures.

In this group of 737 patients, 182 were treated as acute emergencies and are designated series "B". In this series the patients were taken to the emergency room for a history and physical examination after being transferred to an operating-room stretcher. Blood typing and urinalysis were completed before x-ray examination, which was usually a single antero-posterior view of the pelvis. Lateral views were requested only if an impacted or linear fracture was suspected in a relatively painless hip injury. The examination was therefore prolonged only when necessary. Detailed films of the reduction were obtained in the operating room. The view of the pelvis gave the surgeon a look at the contour of the normal side—always the ideal goal in the primary treatment of these fractures. Without delay, and with few exceptions, the series "B" patients were treated by Vitallium Smith-Petersen nails in the intracapsular cases, and McLaughlin plates were added in the intertrochanteric fractures. Technical details of the fractures and operative procedures will be omitted from this paper.

In series "B", the admissions to one service were for a 24-hour period in rotation, with the exception of a small number of private patients.

Series "A" included all other patients admitted to three different services. In many cases, in series "A", the operations were performed soon after admission, but often with a more "laissez faire" approach. By including the neck and intertrochanteric groups in this study, we felt that one might obtain a better estimate of the value of the emergency operation.

In series "B", a more radical attitude was taken in selecting patients for operation, and conservative treatment was reserved for those who did not need operation, i.e. in cases of linear, impacted or incomplete neck fracture, intertrochanteric fracture in a patient under 40 years of age, and in one patient with major injuries which precluded pri-

mary hip surgery. In this series, the poor-risk patients were operated upon in an attempt to lower the mortality—no patient was rejected. Prolonged delays for "medical reasons" were seldom tolerated. It was felt that a competent, aggressive team could prepare almost any patient with a hip fracture for immediate operation under suitable anaesthesia. On several occasions this proved fallacious. The 42-year-old hypertensive female in *extremis* of the series "B" neck fracture group, who died, was operated upon to improve nursing care. The fatal outcome three days later was reluctantly accepted as a surgical mortality.

We have included tables to show the age distribution, as well as sex, mortality rates and the economic status of these patients. The latter aspect is rated by their public ward or private category. Pre-accident health and nutrition were assessed. There appeared to be no significant difference between series "A" and "B" in these factors. Early in the survey, we made a sample study of blood volume determinations by the Evans blue method in order to test for "chronic shock". This was abandoned after we found a retired physician to be the only one in such a state! As would be expected, patients with intracapsular fracture had little primary shock from bleeding, whereas those with an intertrochanteric fracture often required transfusions. The quality of resuscitation and anaesthesia was similar in the two series.

RESULTS

Relation to Age

There was no significant difference in ages between series "A" and "B". The higher mortality rate for intertrochanteric fractures is related to the higher incidence of older people with this fracture.

From Figs. 1 and 2, it may be seen that 72% of the patients in the intertrochanteric group were over 70 years, whereas only 59% of those with intracapsular fractures were over that age. In reviewing the anatomical distribution in the patients under 60, the neck fracture series was 20% compared with 11% of intertrochanteric

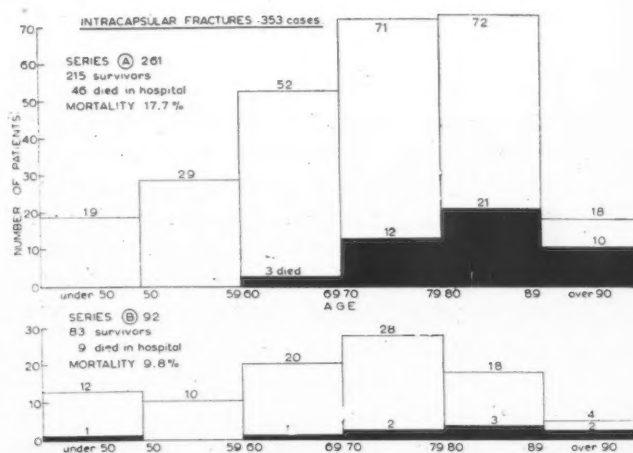


Fig. 1

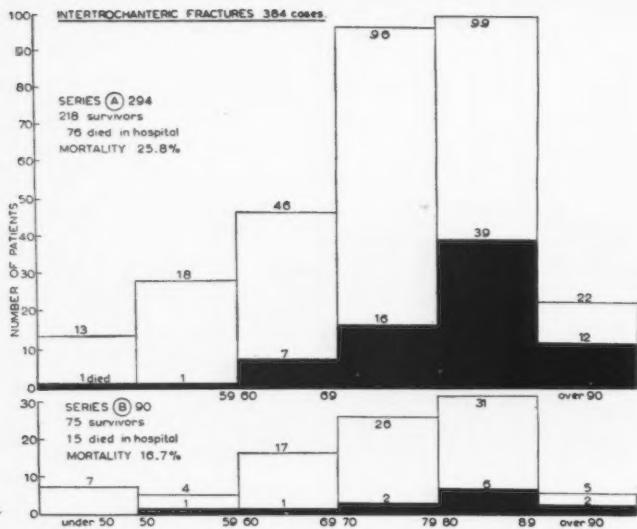


Fig. 2

patients. It should be noted that Toronto proper has an older population than almost any city in Canada. More than 10% of the people are over 65 years of age.⁸ This figure is twice that of most of our suburbs, and much higher than the more northerly cities.

Relation to Sex

The ratio of three females to one male was present not only in both series, but also for both types of fractures. The authors do not have a satisfactory explanation for the striking preponderance of females in this review.

Relation to Economic Status (Table I)

Of the 737 patients, 517 (or 70%), were in the indigent, public-ward category.

TABLE I.—ECONOMIC STATUS OF 737 PATIENTS
PRIVATE 220 - 30%—PUBLIC 517 - 70%

| | | | |
|--------------------------------|-----|----------|-----------------|
| Intracapsular | | | |
| 353 patients—private 105 - 30% | | | |
| Series A | 261 | Fatal 46 | Public 40 - 87% |
| Series B | 92 | Fatal 9 | Public 6 - 67% |
| Intertrochanteric | | | |
| 384 patients—private 115 - 30% | | | |
| Series A | 294 | Fatal 76 | Public 61 - 80% |
| Series B | 90 | Fatal 15 | Public 9 - 67% |

Relation to Anaesthesia

The anaesthetic staff suggested that the duration of anaesthesia might be a factor in survival.

In series "B", the anaesthetic time averaged one-half hour less in both neck and intertrochanteric groups. The significance of this observation must be questioned because there was no real difference within the larger series "A" between the surviving and fatal groups.

Incidence of Infection

Although wound infections were more frequent in the intertrochanteric fracture group in both

series, no significant correlation with mortality could be demonstrated. Airborne contamination probably varies directly with the length of wound exposure in major procedures. The addition of a larger haematoma, and more local tissue trauma, might suffice to explain the higher rates in intertrochanteric fractures. Some of these infections were very serious despite antibiotic therapy. The prophylactic use of antibiotics was popular in the early part of this study, but this enthusiasm waned. There was one non-fatal case of infection due to *Clostridium welchii*.

Time Values

Table II compares the average time from admission to anaesthesia, and the duration of hospital stay, in the two series.

TABLE II.—TIME

| Admission to anaesthesia | | Days in hospital |
|--------------------------|--------|------------------|
| Intracapsular | | |
| Series A | Fatal | 56.1 hours |
| | Living | 33.6 hours |
| Series B | Fatal | 7.3 hours |
| | Living | 5.7 hours |
| Intertrochanteric | | |
| Series A | Fatal | 49.8 hours |
| | Living | 36.6 hours |
| Series B | Fatal | 4.6 hours |
| | Living | 4.4 hours |

This study was timely because it covered the period before the Ontario Hospital Services Commission took over. The problem of the frail, aged "orphan" with no place to go is a frequent one. The wealthy dowager with paid-up insurance, and an indulgent physician, may be less anxious to leave the bed that was sought so urgently when her injury occurred.

The problem of disposing of patients who have impaired balance, visual defects, obesity, and other associated illnesses is a constant challenge to hospital discharge committees. The figures in this table are bluntly significant.

DISCUSSION

The in-hospital mortality rates, as illustrated in Figs. 1 and 2, show substantial differences between series "A" and "B". Apart from the elementary charity of shortening the initial pain interval, emergency operation seemed to be the crux of a successful policy to reduce mortality. Perhaps more intensive aftercare was a contributing feature, but, with the exception of a reduced period of anaesthesia, other factors in the two series appeared equal.

The highest mortality rates in series "A" were in the indigent public-ward patients in both the intracapsular and intertrochanteric groups as seen

in Table II. More thorough supervision of the entire management of these poor-risk patients is indicated. Most surgeons regard pneumonectomy and pancreatectomy as major procedures requiring masterful surgery and aftercare. The mortality rates for these two procedures, in *expert hands*, are lower than for hip fractures. Therefore, in a teaching hospital, the fractured hip is not the sphere for the surgical trainee except when "assisted by a master surgeon in the Gallie tradition".⁹ Survival is the main hurdle in intertrochanteric fractures as union follows faithfully. However, in the intracapsular fractures, the surgeons' difficulties are often prolonged by avascular necrosis and delayed union.

The authors concluded this survey after ten years, but will continue to observe the end results for a later report. A changing policy, employing the Jewett unit for fixation of intertrochanteric fractures, and selected use of primary arthroplasty in certain intracapsular fractures, is being pursued. It will be interesting to observe the long-term results over the next ten-year period.

TABLE III.—MORTALITY, 1945 - 1946, INCLUSIVE

| | |
|----------------------------|--|
| <i>Intracapsular</i> | |
| Total 71 - 17 deaths - 24% | |
| <i>Intertrochanteric</i> | |
| Total 54 - 15 deaths - 28% | |

In Table III the results in this hospital for the years 1945-1946 are summarized. During that time neck fractures were nailed, but intertrochanteric fractures were treated by traction. The results in the latter group were not much improved in series "A". However, in series "B" they were substantially better. The aggressive operative approach is probably the important factor.

The number of and the mortality in the non-operative cases are recorded in Table IV.

TABLE IV.—NON-OPERATIVE

| | | | | | |
|--------------------------|-----------|------|-----------|-----|--|
| <i>Intracapsular</i> | | | | | |
| Series A..... | 25 in 261 | 9.6% | 11 deaths | 44% | |
| Series B..... | 6 in 92 | 6.5% | 0 deaths | | |
| <i>Intertrochanteric</i> | | | | | |
| Series A..... | 47 in 254 | 16% | 17 deaths | 36% | |
| Series B..... | 6 in 90 | 6.6% | 0 deaths | | |

SUMMARY

Mortality rates have been studied in a series of 737 patients with fractured hips treated over a ten-year period. Immediate operation appears to reduce the in-hospital mortality rate. An aggressive policy of management has shortened the duration of hospital stay considerably. Of adult fractures, hip fractures continue to be the major cause of mortality.

The authors wish to thank all the members of the surgical, photographic, and record departments who have co-operated in this continuing review.

REFERENCES

1. EVANS, E. M.: *J. Bone & Joint Surg.*, 31B: 190, 1949.
2. *Idem*: *Ibid.*, 33B: 192, 1951.
3. SCOTT, J. C.: *Ibid.*, 33B: 508, 1951.
4. (a) EVANS, E. M.: *Ibid.*, 34B: 333, 1952.
(b) GISSANE, W.: *Ibid.*, 34B: 335, 1952.
(c) SCOTT, J. C.: *Ibid.*, 34B: 336, 1952.
5. CLEVELAND, M., BOSWORTH, D. M. AND THOMPSON, F. R.: *J. A. M. A.*, 137: 1186, 1948.
6. DICKSON, J. A.: *J. Bone & Joint Surg.*, 35A: 805, 1953.
7. CLEVELAND, M. et al.: *Ibid.*, 41A: 1399, 1959.
8. Canada. Dominion Bureau of Statistics: *Census of Canada: Population (Age-Groups)*, Bulletin 1-9. Queen's Printer, Ottawa, 1956.
9. DEWAR, F. P.: *J. Bone & Joint Surg.*, 41B: 849, 1959.

1 Chestnut Park Road,
Toronto 5.

RÉSUMÉ

Se basant sur l'étude d'une série de 737 cas de fracture de la hanche vus au cours d'une période de dix ans à l'hôpital Saint-Michel de Toronto les auteurs prétendent que l'intervention immédiate semble diminuer la mortalité de la période post-traumatique alors que le malade est encore à l'hôpital. La conduite énergique du traitement a contribué à diminuer considérablement la période d'hospitalisation. Les atteintes de la hanche sont encore la principale cause de mortalité rattachée aux fractures chez l'adulte.

CASE REPORT

PRIMARY SYSTEMIC AMYLOIDOSIS PRESENTING AS SCLERODERMA*

WILLIAM B. LEACH, M.D., M.Sc.,
PHILIP S. VASSAR, M.B., B.S. and
CHARLES F. A. CULLING, F.I.M.L.T., F.R.M.S.,
Vancouver, B.C.

THE protean manifestations and vagaries of primary systemic amyloidosis are well known, and its ability to imitate many disease complexes by involvement of various organs of the body may frequently lead

to an erroneous diagnosis. This difficulty is often enhanced by the atypical staining characteristics of this disease. The case presented in this report is one of chronic progressive disease which, in many respects, resembled the onset and course of scleroderma and in which a diagnosis of primary systemic amyloidosis could not be established until late in the course of the disease.

Mrs. C.R., aged 50, a white housewife, was admitted to hospital on June 28, 1958, with complaints of shortness of breath and ankle swelling for six months, gradually increasing in severity; weight loss of 24 lb. over a period of one year, associated with anorexia for six months; difficulty in swallowing and weakness

*From the Department of Pathology, Vancouver General Hospital and University of British Columbia, Vancouver, B.C.

of her voice for one month; and tingling sensations in her palms, especially the thenar eminences, for one year; this was bilateral and spread to the tips of the fingers where it was associated with pain, trophic changes in the skin, and small ulcerations of the fingertips involving principally the inner aspects of the thumb and first and second fingers. Associated with this was a gradually increasing stiffness and numbness of the fingers.

At physical examination on admission, she was pale and showed flattening of the facial expression. Her blood pressure was 110/60 mm. Hg, pulse 80 and regular, temperature 98° F. Coarse rales were heard in both lung bases. Borderline enlargement of the heart was found. Her abdomen was tense and the liver enlarged 3 cm. below the right costal margin. The spleen and kidneys were not palpable. Slight tenderness was noted in the right lower quadrant on deep palpation. Examination of the upper extremities revealed thumbs and middle fingers of both hands to be cold and pale. There was bilateral wasting of the thenar eminences and decreasing sensation over the areas of median nerve distribution. The peripheral pulses were satisfactory. The lower extremities presented no abnormal findings.

Urinalysis: specific gravity was 1.010; otherwise negative. Fasting blood sugar was 90 mg. %, non-protein nitrogen (N.P.N.) 34 mg. %, uric acid 3.5 mg. %, total serum protein 5.4 g. %, with albumin 3.9 g. % and globulin 1.5 g. %. Haemoglobin value was 9.3 g. (64%), sedimentation rate 67 mm. in one hour, white blood cell count 5350, with a normal differential. The lupus erythematosus test was negative. X-ray examination of the chest, dorsal and lumbar spine, gastrointestinal tract and kidneys was essentially normal. Electrocardiography revealed a non-specific pattern.

The patient remained in hospital for 26 days, during which time a decompression and neurolysis of the median nerve was undertaken bilaterally because of the suspected diagnosis of carpal-tunnel syndrome. Skin and muscle biopsies done at this time and stained for amyloid by methyl violet and Congo red revealed only minor non-specific and equivocal histological changes.

She was next admitted to hospital on October 7, 1958, complaining of gradual swelling of her abdomen for several weeks, and of nausea and vomiting for one week. Her fingers had remained numb over the distribution of the median nerve after the operation and she had had occasional blisters on the affected fingers during the previous two months. Her face was expressionless but there was no marked thickening of the skin. Blood pressure was 90/65 mm. Hg, pulse 94 and heart sounds normal. The abdomen was markedly distended, but no tenderness or rigidity was noted. The lower extremities were essentially normal except for some pigmentation in the region of the ankles. Numbness over the median nerve distribution in both hands was present and there was moderate wasting of the thenar and hypothenar muscles, particularly of the right hand.

Haemoglobin value was 11.3 g. (78%), sedimentation rate 33 mm. in one hour, white blood cell count 6800, with a normal differential. Her N.P.N. was 35 mg. %, total protein 5.2 g. %, serum chloride 97 mEq./l., bicarbonate 30 mEq./l., sodium 133 mEq./l., and potassium 3.4 mEq./l. Stool tests for occult blood were consistently negative. Electrocardiography reveal-

ed minor non-specific ST and T changes. X-rays of her chest were negative but radiographs of the abdomen gave an appearance consistent with mechanical obstruction, probably in the mid-transverse colon. Barium enema examination revealed a hugely dilated proximal half of the transverse colon and ascending colon. There was no radiological neck or constricted area midway along the transverse colon to account for this dilated proximal portion. Her temperature in hospital was consistently normal. The abdominal distension continued with persistent nausea and occasional vomiting. A laparotomy was undertaken and both large and small bowel were noted to be oedematous and thick-walled. The right colon and transverse colon were filled with putty-like material. The descending colon was relatively collapsed but also thick-walled.

Clinically, the important findings were considered to be dyspnoea, oedema, a 24-lb. weight loss, a weak voice, vasospasm, lack of expression and stiff fingers, rales and systolic murmurs, hepatomegaly, anaemia, enlarged lymph nodes, abdominal distension and renal changes. Of these the most important were weight loss, vasospasm, lack of expression and stiff fingers, and abdominal distension. A diagnosis of scleroderma was favoured in view of these findings, because although the abdominal complaints did not completely fit the picture, they have been recorded in other cases of scleroderma.

Biopsy material from the skin, ileum and sigmoid colon revealed extensive deposits of amorphous hyaline material within the muscle wall and blood vessels. Although these findings could be interpreted as severe scleroderma, the diagnosis of amyloidosis was strongly considered. Methyl violet stains were poor, but suggestive of amyloidosis. At this time, investigations into the use of tissue staining by fluorescent dyes, using an ultraviolet microscope, were being undertaken in the department.¹ It was found that thioflavine T gave a brilliant staining reaction with amyloid and this specificity was confirmed in many different cases. Sections of bowel from the present case were stained with thioflavine T and examined with an ultraviolet microscope; the areas of amorphous hyaline material were found to be strongly fluorescent (Fig. 1). Re-examination of the original skin biopsy by this technique revealed foci of stromal and blood vessel fluorescence indicative of amyloidosis.

Postoperatively the patient became progressively weaker and more emaciated. Her blood pressure remained in the vicinity of 70/40 mm. Hg. She was frequently nauseated and vomited on many occasions. Her pallor became more marked and she developed severe wasting. Shortly before she died, her left leg and foot had become grossly oedematous. She died 60 days after her final admission to hospital and 11 months after the onset of her symptoms.

AUTOPSY EXAMINATION

Gross findings.—The general examination of the body revealed marked oedema of the left leg and foot. Her skin everywhere was pale and slightly firm in consistency. Marked generalized muscle wasting was demonstrated, in particular of the upper extremities and the hands, where the thenar and hypothenar eminences on both sides showed marked atrophy. Both lungs showed marked congestion and oedema. Her heart weighed 350 g. The right ventricular musculature measured 3 mm. and the left ventricular musculature



Fig. 1.—Section of bowel stained with thioflavine T and photographed under ultraviolet light. The brightly fluorescent amyloid is clearly seen. $\times 250$.

15 mm. There was a diffuse firmness of the myocardium and moderate pallor. This firmness extended into the atria, which were resistant and rather stiff. The coronary artery system was essentially normal. Her liver weighed 1000 g., and demonstrated no gross abnormalities. Small, faceted, pigmented stones were present in the gallbladder. The spleen weighed 200 g., and was extremely firm in consistency and brick red in colour. The cut surface was homogeneous. Her kidneys were grossly normal. The wall of the oesophagus demonstrated a diffuse pallor and was thickened to 8 mm. This extended to some extent into the stomach. The wall of the small intestine throughout its length was also diffusely thickened, was pale in colour and measured approximately 5 mm. The terminal ileum had been surgically divided at a point 10 cm. proximal to the ileo-cæcal valve, and this was anastomosed in an end-to-side fashion to the sigmoid colon just above the rectum. The cæcum, right ascending colon, and proximal half of the transverse colon were greatly dilated and filled with large faecal masses. The wall was pale in colour and leathery in consistency. Some superficial mucosal ulcerations were present in the cæcum and ascending colon. The distal half of the transverse colon and descending colon were of more normal size, but demonstrated marked pallor and marked thickening of the wall. The mucosa in this area appeared to be intact.

Microscopical Findings

There was diffuse amyloid infiltration of the smooth muscle in the gastro-intestinal tract, spleen, uterus,

lungs, skeletal muscle, and connective tissue in the breast and nerves, although the nerve bundles were unaffected. The atrium showed marked endocardial amyloid degeneration extending through the atrial myocardium.

In the skin and pancreas the changes were obvious but less marked.

In the adrenal, ovary, kidney and brain, amyloid deposition was confined to the wall of arteries and arterioles.

In view of the difficulties encountered in this case it was decided to re-examine sections of previously diagnosed cases of scleroderma. A search of the files revealed five cases of diffuse scleroderma and 12 cases of localized scleroderma. Sections from every case were examined by fluorescent microscopy after thioflavine T staining, but all were negative.

FLUORESCENT METHOD

This method has been described fully by Vassar and Culling,¹ and, briefly, consists of staining sections in 1% thioflavine T for three minutes, differentiation in 1% acetic acid for 10 minutes and mounting in Apathy's medium. (Prestaining of nuclei with hæmatoxylin for two minutes to quench nuclear fluorescence is sometimes necessary.) The slides are examined using a maximum pressure mercury vapour lamp (or other bright ultraviolet source) as an illuminant, with a Zeiss UG5 exciter filter in the substage and a simple (colourless) ultraviolet filter in the eyepiece. Only amyloid is stained yellow.

SUMMARY

A case is presented which was diagnosed clinically as scleroderma. An early skin biopsy gave negative results for amyloid when Congo red and methyl violet were used. A diagnosis of diffuse primary amyloidosis was established by use of a new specific fluorescent staining method. Seventeen cases of scleroderma were examined in a similar manner and all proved negative for amyloid.

REFERENCE

1. VASSAR, P. S. AND CULLING, C. F. A.: *A.M.A. Arch. Path.*, 68: 487, 1959.

Boyle tells us that "when I asked our famous Harvey, in the only discourse I had with him (which was but a while before he died), what were the things that induced him to think of circulation of the blood, he answered me that when he took notice that the valves in the veins of so many several parts of the body were so placed that they gave free passage of the blood towards the heart but opposed the passage of the venal blood in the contrary way, he was invited to imagine that so provident a cause as nature had not placed so many valves without design. And no design seemed more probable than that since the blood could not well, because of the interposing valves, be sent by the veins to the limbs, it should be sent through the arteries and return through the veins whose valves did not oppose its course in any way". — C. J. Longland, *Scot. M. J.*, 5: 172, 1960.

THE CANADIAN MEDICAL ASSOCIATION
JOURNAL
LE JOURNAL DE
L'ASSOCIATION MÉDICALE CANADIENNE

published weekly by

THE CANADIAN MEDICAL ASSOCIATION

Editor: D. C. GRAHAM, M.D., F.R.C.P.[C.]

Managing Editor: T. C. ROUTLEY, M.D., F.R.C.P.[C.]

Assistant Editor: GORDON T. DICKINSON, M.D.

Editorial Offices: 150 ST. GEORGE ST., TORONTO

(Information regarding contributions and advertising will be found on the second page following the reading material.)

THUNDER IN THE PARADISE
OF BRITAIN'S N.H.S.

ON SUNDAY, July 10, the Canadian Broadcasting Corporation, in its television program "Outlook", presented a panel-type discussion of unusual interest and import to the medical profession of Canada. It is our opinion that such presentations by the public information media of this country create a profound impression upon the thinking of the laity and go far in shaping the "doctor-image" in the mind of the average citizen. We consider, therefore, that this subject is of sufficient importance to merit comment in these editorial pages.

The panel of discussants on the program in question consisted of three Canadian physicians, and it was moderated by Mr. Arnold Edinborough, the suave and articulate editor of "Saturday Night". The major topics of discussion concerned the opinions of the physician-members of the panel regarding health insurance in general, its applicability and imminence in Canada, the necessity or otherwise of nationwide, government-supported, compulsory coverage of all citizens, and the reactions of the public and of the medical profession in countries where such programs had already been established.

During the course of discussion, it was observed that certain Canadian physicians had, for some time, been making pronouncements emphasizing the discontent and disillusionment of their British colleagues with the National Health Services in that country, and their grave concern for the future of medical practice under N.H.S. The moderator and two of the doctors on his panel left the impression with this viewer, and we assume with the audience in general, that they considered these views to be a gross exaggeration, or even a misrepresentation of the situation as it really exists, and that in actual fact the British public as a whole, and the great majority of British doctors, are quite satisfied with the system of medical care as practised under the National Health Service.

This bland reassurance fails to ring true in the face of a veritable volley of pronouncements by respected and responsible representatives of our

profession in Britain. Much of their concern and dissatisfaction with the workings of N.H.S. were summed up in the Presidential Address delivered by Sir Arthur Porritt at the annual meeting of the British Medical Association in mid-June. In presenting this saga of disillusionment, we can do no better than quote directly from those passages in Sir Arthur's text which contain his indictment of medicine under the N.H.S.:

"In 1947, the then Minister of Health wrote an open letter to the profession, preliminary to the institution of the National Health Service. In it he wrote the following words: 'Differences of opinion as to means and methods are important but never insurmountable and cannot conceivably be allowed to over-ride the main objective—the welfare of men, women, and children whose care the profession undertakes and who are wholly dependent on that care. A sincere co-operation between the profession and the Minister can ensure the greatest Health Service this or any other country has ever known; a failure to co-operate can redound only to the detriment of the people whom both wish to serve.' He professed the desire to bring the profession right into the direct administration of the service.

"This statement was without doubt made in the best of good faith—even, perhaps, with the euphoria of Welsh idealism. What a tragedy it is that this conception of equal partnership between government and profession for the eminently praiseworthy purpose of ensuring the well-being of the nation should have failed so dismally. For let us be quite frank and appreciate the fact that the system originally envisaged has not worked as it should have worked, and the test of time (and reasonable time, surely—eleven years or more) has shown basic differences in ideology sufficiently strong at times to threaten the ruin of a superb ideal. That the absence of co-operation, so essential to the smooth working of the Service, has not so far, as Mr. Bevan said, 'redounded to the detriment of the people whom both wish to serve' is evidence that there is still a genuine desire to achieve some measure of success.

"But there is no doubt that the original idea of partnership has been steadily and slowly—almost insidiously—displaced by what has been called the 'employer-employee' relationship, the profession being the employee. No one in his senses would belittle the intrinsic value of the Civil Service in dealing with the organizational machinery of the country, but those very stereotyped methods which ensure its success in so many material fields, have been the basic cause of its relative failure to cope with a service which is essentially concerned with people, not things. And, when one appreciates that those people are, in fact, patients and doctors, joined in the Health Service in a peculiar personal relationship, then it becomes only too evident that an impersonal government department is not the right or best mechanism through which to administer it . . .

"Because they have had some means and better opportunities of voicing their disquiet at the trend of events, doctors have received perhaps undue and certainly unwanted publicity. This has given an unfortunate bias to the never-ending and largely unproductive discussions between the profession and its Civil Service administrators. What the doctors have been seeking all along are the right conditions and the best facilities to allow them to give optimum service to their patients.

"And what have we heard of the patients? By what method can they voice their appreciation or dislike of the existing service? They, too (and they are infinitely more numerous than their doctors), are in danger of losing some of their personal freedoms—surely a basic heritage in this country. And this happens not from any deliberate attempt to enslave a profession or its clientele but because a departmental mechanism is not geared to cope with the humanities.

"And so, most unfortunately, instead of a partnership, there has been engendered an atmosphere of distrust, if not at times of actual antagonism. It surely behoves us, who love our calling, to try to dispel these clouds; but can a satisfactory relationship be established without a major change of policy at governmental level? . . . Can the ideal of equal partnership be fulfilled?"

In presenting his views on possible methods of solving these problems, Sir Arthur commented—"Or, finally should we widen the vista of possibilities still further and consider an idea that has been mooted before but has perhaps not received the attention it deserves—that of an independent corporation? It is only too easy to envisage the difficulties of such an administration; but difficulties exist only to be overcome, and there exists ample precedent in the shape, for example, of the Arts Council, the University Grants Committee, the British Broadcasting Corporation, and now the Post Office.

"What such a scheme implies in essence is the disbursement and application of public moneys by an independent body without the intervention of departmental machinery, and without the need for a Minister to be answerable to Parliament for the day-to-day conduct of such a service. Given the right representation in the governing board of such a corporation—and in medicine, this would, of necessity, mean at least equal partnership of the profession—there should be possible a flexibility of policy much more in keeping with the human objects and ideals of medicine. Even more important, it would lift medicine out of the realm of party politics—an influence which has bedevilled the National Health Service from before its inception."

The enthusiastic "amen" of his colleagues was sounded editorially in the *British Medical Journal* in these words: "Sir Arthur Porritt has had the courage to speak plainly on matters about which he has thought deeply. He speaks with authority and

refreshing vigour. No one can view with complacency the present relationship between profession and government, and only a few weeks ago the B.M.A. Council approved a report which conveyed some of the profession's anxieties about this relationship. These knotty problems of relationship cannot be settled overnight."

If any further evidence is needed to establish that the medical profession in Britain is dissatisfied with present conditions of medical practice and deeply concerned regarding their future, it is to be found in the voluminous proceedings of the Annual Representative Meeting of the B.M.A. and the continual flood of contributions to the correspondence columns of the British medical periodicals. These are not the loud and frenzied shouts of a handful of malcontents but the seriously considered and thoughtful opinions of a host of respected, responsible doctors.

No, Mr. Edinborough, the atmosphere pervading the National Health Service in Britain is not one of unmitigated sweetness and light. To inform the Canadian public otherwise is a fallacy and a disservice.
Ed.

THE URICOSURIC EFFECT OF SEVERAL DERIVATIVES OF CUMARIN AND INDANEDION

Various anticoagulants have been found to have a uricosuric effect. G. Pasero, of Pisa, Italy, reviewed the effects of ethyl biscoumacetate, acenocumarin, and of phenylindanedion and several other indanedion derivatives (*Deutsche med. Wchnschr.*, 85: 854, 1960). Whilst 1200 mg. of ethyl biscoumacetate increases the clearance of uric acid threefold in two hours and maintains it almost at the same level up to four hours, 200 mg. of phenylindanedion produces a twofold increase which is maintained for four hours. Seven milligrams of 2-(4-bromophenyl)-indanedion produced only a slight increase of clearance, but 200 mg. of 2-phenyl-5-brom-indanedion caused the clearance to rise from the control level of 10 to 13 two hours after administration and to 19 four hours later. It is of particular interest that this latter agent is free of anticoagulant activity and that administration of 100 mg. daily over a prolonged period of time has not produced any serious toxic effect in man and has been accompanied by a uricosuric effect similar to that of probenidol when given in ten to 15 times higher doses. It was well tolerated over a period of many months.

In contrast to the anticoagulants, the uricosuric action of this chemical is not abolished by vitamin K. Phenylindanedion and zoxazolamine have a similar chemical structure and the uricosuric action of the latter has been well documented and known for several years.

According to Pasero, the 2-phenyl-5-brom-indanedion has specific action on the tubular transport of uric acid. In contrast to probenidol, it does not affect the tubular transport mechanisms of p-aminohippuric and p-aminosalicylic acids or of glucose.

W. GROBIN

VITAMINS A PLUS E PLUS B₆ IN THE
TREATMENT OF ARTERIOSCLEROSIS

Experimental evidence that spontaneous atherosclerosis in hens could be made to regress by administration of vitamin A, and that this effect was reinforced by simultaneous giving of vitamin E, has been reported in the literature for several years. The effect of vitamin A and of vitamin A plus E was shown to extend to the lipids of the aortic wall but not to the connective tissue of the aorta. Vitamin B₆ administration diminished the amount of ground substance and in higher dosage also the collagen of the aortic wall. These observations are reviewed by Schettler *et al.*, who studied their effect on humans (*Deutsche med. Wchnschr.*, 85: 732, 1960). Ophthalmologists have reported a favourable effect of vitamin A plus E on the arteriosclerotic lesions of the retina and on the associated disturbances of vision, but it is well known that arteriosclerosis of the eye ground is not necessarily comparable to that of other organs such as the heart or the extremities. Even the condition of cerebral arteries cannot be estimated from the state of the retinal arteries.

The criteria used in this co-operative study of the therapeutic effect of the three vitamins were: intermittent claudication, anginal pain, ability to concentrate, disturbances of memory, and vertigo. Oscillometry, the two-step exercise test of Master and electrocardiography were used for objective evaluation of the patients' reports and serum lipids were regularly estimated. In a preliminary examination of 325 patients who were given three to six dragees containing 30,000 units of vitamin A and 70 mg. of vitamin E in each, daily for 1½ years, 51% claimed marked improvement in their condition. It was then decided to proceed with a double-blind test to avoid any effect of suggestion. Similar dragees were prepared, each of a combination of vitamin A plus E, of vitamin A plus E plus B₆, and of a placebo which contained lactic sugar and other inactive substances. Of 269 patients who participated in this study, 81 received placebos, 114 were given vitamin A plus E, and 74 vitamin A plus E plus B₆. In addition, 89 patients were available for the study of serum lipid values after the administration of vitamin A plus E plus B. The most striking finding was the high percentage of patients receiving placebo who claimed improvement. This was the highest in intermittent claudication (36%) and lowest in cerebral arteriosclerosis (20%). Angina pectoris was improved by placebo administration in 32% of cases. The difference between the percentages of improvement by the administration of vitamin A plus E or vitamin A plus E plus B₆ and that of placebo was not of any statistical significance.

The walking test showed 26% of improvement after placebo, 32% after vitamin A plus E, and 15% after vitamin A plus E plus B₆. Oscillometry showed 100% increase of pulsation in 12% each of patients given vitamin A plus E and vitamin A plus E plus B₆. Only one patient of those given placebo showed improved oscillometric readings after treatment. On the other hand, a statistical analysis of efficiency of circulation by measurements of pulse rate, elastic resistance of vessels,

minute volume, frequency, blood pressure and peripheral resistance, showed no significant variation between the three groups. Coagulation studies in 53 patients after four weeks' administration of the vitamins revealed no definite improvement. Except for mild dermatitis, pruritus and eczema in ten patients, no side effects were observed in the whole group. In most patients no definite or beneficial change of serum total lipid, total cholesterol, neutral fat, or phospholipid values was found, nor were the electrophoretic determinations of lipoproteins and glycoproteins influenced in any significant way. Occasionally, administration of vitamin A and E was followed by hyperlipæmia, for which no satisfactory explanation is forthcoming.

In summary, then, administration of vitamin A plus E and of vitamin A plus E plus B₆ to patients with arteriosclerosis failed to reveal any valuable effect.

W. GROBIN

"HUMANE" WEAPONS OF WAR

In this day and age when the major world powers possess weapons capable of producing utter and complete devastation of vast areas, widespread death and destruction, contamination of water supplies, levelling of all buildings including hospitals, and disruption of civil agencies and services past any recovery point, it is heartening to learn that at least one military research project is concerned with the business of injecting an element of humanity into warfare by the development of less, rather than more devastating weapons.

In its "Project Summit" at the Institute for Co-operative Research of the University of Pennsylvania, the U.S. Army Chemical Corps is studying the feasibility of employing non-lethal biological and chemical weapon systems in various types of military situations, as an alternative to the agents of total destruction. Clearly this is an important question, since these weapons have particular advantages not possessed by any other weapons system. They would affect water supplies temporarily if at all. Hospitals in the area of attack could continue to function and the citizenry would be capable of continued self-maintenance and survival. The most spectacular feature of these weapons, as their name implies, is that they would not kill. The possible political consequences of the use of non-lethal biological and chemical weapons is also being studied. On the surface it appears that world opinion opposes their employment as agents of war. Nevertheless it is evident that they are the subject of intense interest both on this continent and abroad.

Ed.

CHANGE OF ADDRESS

Subscribers should notify the Canadian Medical Association of their change of address one month before the date on which it becomes effective, in order that they may receive the Journal without interruption. The coupon on page 31 is for your convenience.

Medical News in brief

IRON THERAPY IN CHRONICALLY FATIGUED, NONANÆMIC WOMEN: A DOUBLE-BLIND STUDY

Symptomatic iron deficiency without anaemia has often been regarded as a clinical entity. Recent studies demonstrating that iron enzymes may be depleted in experimental animals with little or no lowering of the blood haemoglobin level lend a possible basis to the appearance of symptoms in nonanaemic, iron-deficient patients. However, no well-controlled studies have been carried out to determine whether nonanaemic patients exhibit a genuine clinical response to iron therapy.

Iron and placebo were given by Beutler, Larsh and Gurney (*Ann. Int. Med.*, 52: 378, 1960) to a group of women who complained of chronic fatigue but whose blood haemoglobin levels were above 12.0 g. %. Each woman received one period of iron therapy and one period of placebo therapy; the order of presentation of iron and placebo was varied at random. Comparative improvement in the two periods of therapy was correlated with independently determined measures of the body iron stores, viz. of bone marrow stainable iron, plasma iron, and iron binding capacity. Determinations of haemoglobin level were carried out at intervals.

Although the haemoglobin values of the patients were all within the normal range at the beginning of the study, an increase in the average haemoglobin level occurred in the iron-deficient group when they were given iron. Apparently, although the haemoglobin value of these patients was within the normal range, it was frequently below their individual norm. No significant change in the average haemoglobin level occurred in the group of patients with adequate iron stores, or in the iron-deficient group during placebo administration. Of 18 iron-depleted patients, 13 manifested greater symptomatic improvement with iron therapy than with placebo therapy, while five improved more with placebo therapy than with iron therapy. In contrast, of 11 women with only slightly reduced iron stores or normal iron stores, four improved more with iron, five manifested greater improvement with placebo, and two did not improve at all. In view of these results, the possibility that nonanaemic women may benefit clinically from iron therapy deserves further study.

CLINICAL USE OF HEXADIMETHRINE BROMIDE (POLYBRENE) AS AN ANTIHEPARIN AGENT IN OPEN HEART SURGERY

Hexadimethrine bromide (Polybrene) is a stable quaternary ammonium salt with the formula $(C_{13}H_{30}Br_2N_2)_x$. It shares features with both protamine and toluidine blue, and exerts a potent antiheparin effect both *in vivo* and *in vitro*. It is also in itself an anticoagulant.

The reversal of the anticoagulant effect of heparin by hexadimethrine bromide was made use of by Blumberg *et al.* (*J. Thorac. Cardiovasc. Surg.*, 39: 330, 1960) in approximately the first half of 100

patients undergoing heart surgery. The superiority of hexadimethrine bromide over protamine seems unequivocal.

The clotting time, measured 15 minutes after administration of hexadimethrine bromide, was between 5 and 10 minutes in 80% of the patients, and consistently below 15 minutes in all patients without complicating factors. Two patients developed a maculopapular rash not clearly related to administration of this drug. Both responded readily to intravenous diphenhydramine. The ratio of 1.0 mg. of hexadimethrine bromide to 1.0 mg. of heparin was most effective. Only occasionally was additional hexadimethrine bromide necessary to obtain the desired effect.

The main advantages of this drug over others with similar action include stability; more rapid action; greater margin of safety between doses which have a good antiheparin effect and doses which might exert a synergistic anticoagulant effect; uniform potency; and absence of severe hypotensive reactions.

The combination of these attributes and this experience indicate the value of hexadimethrine bromide in open heart surgery, and whenever rapid and complete reversal of the heparin effect is desired.

VALIDITY OF PATHOLOGICAL DIAGNOSIS OF BREAST CANCER

Underlying discussions on the survival experience of cancer patients there is often a certain degree of doubt whether all the cases actually were cancer. Linden *et al.* (*J. A. M. A.*, 173: 143, 1960) undertook to test the validity of microscopic diagnosis of breast cancer reported to the California Tumor Registry in patients who had survived at least five years. Specifically, the study evaluated the five-year survival rate of 44% of patients whose cases had been diagnosed during the period 1942-1948.

Slides from 136 cases of patients with five or more years of survival, from 14 patients having breast cancer with less than five-year survival, and from 15 patients having benign breast lesions were reviewed independently by three outstanding pathologists. The reviewing pathologists reconfirmed the diagnosis of breast cancer for 123, or 90.4% of the total of 136 cases. The confirmation was made in each case by at least two of the three pathologists. However, the comments made by the three pathologists led to the suspicion that some of the slides received for study were not the slides from which the original diagnosis had been made. It was possible to obtain additional slides from the hospital on eight of the 13 cases diagnosed as "not cancer" by the pathologists. To these were added slides from several benign cases and from cases of patients with less than five-year survival. All three pathologists diagnosed seven of these eight cases as cancer on the basis of the second group of slides. Added to the 123 originally diagnosed as cancer, the reconfirmed cases total 130 of 136 cases, or 95.6%.

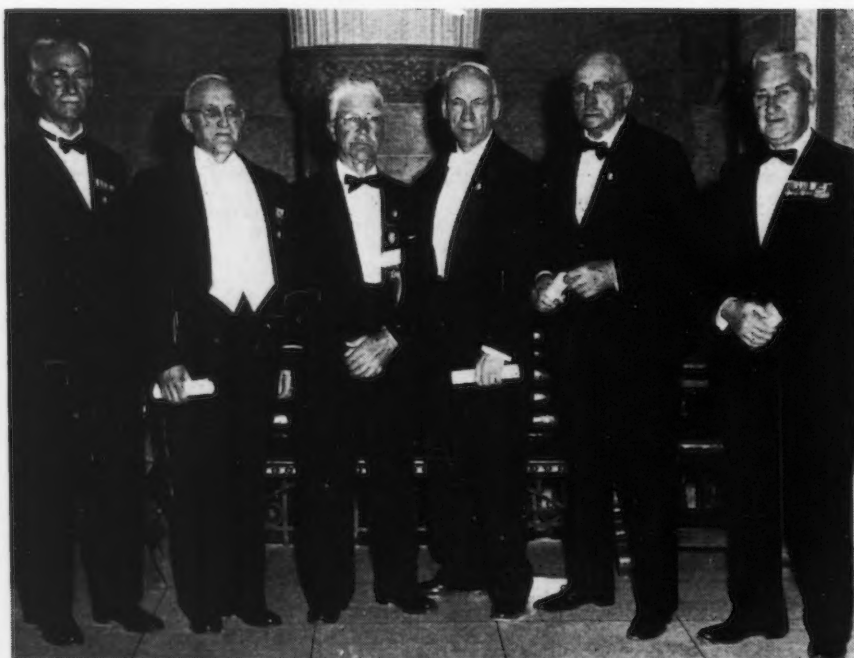
It would appear therefore that the five-year survival rate of 44% of patients whose cases were reported to the California Tumor Registry during 1942 to 1948 is validly based on cases of malignant breast cancer, and that the findings of the study are indicative of the quality of diagnosis afforded to patients with breast cancer.

(Continued on advertising page 22)

THE NINETY-THIRD ANNUAL MEETING OF THE C.M.A.

THE ninety-third annual meeting of the Canadian Medical Association was held at Banff, Alta., June 13 to June 17, 1960, amid the surroundings of one of the world's most delightful beauty spots. As observed in the message of welcome from the President-Elect, it was in 1889 that our Association first met in this majestic setting, on which occasion the only presentation by a member from "the Territories" was a paper on the benign climate of southern Alberta! Our hosts

of the Alberta Division, and in particular all members of the local committees, deserve congratulations and a hearty vote of appreciation for the efficient manner in which all aspects of the meeting were arranged, and for the characteristic western-style hospitality which greeted their guests. The latter, by the way, included more than 2000 doctors and their wives from all parts of Canada.



Recipients of Senior Membership in the Canadian Medical Association (left to right): Dr. James Douglas Adamson, Winnipeg, Man.; Dr. Cecil Darling Kean, St. John's Nfld.; Dr. Gordon Samuel Fahrni, Vancouver, B.C.; Senator (Dr.) Frederick William Gershaw, Medicine Hat, Alta.; Dr. Ludwig Stewart Mackid, Calgary, Alta.; and Dr. Harvey Gordon Young, Moose Jaw, Sask.

ANNUAL GENERAL MEETING

At 8.15 p.m. on Wednesday, June 15, the Annual General Meeting in the Ballroom of the Banff Springs Hotel opened with the singing of "O Canada". Distinguished members of the Platform Party included Alberta's Lieutenant Governor, the Honourable J. Percy Page, and the Prime Minister, the Honourable E. C. Manning. Following the invocation by the Rev. George A. S. Hollywood of St. George's in the Pines, Banff, the guests were welcomed by Dr. E. Kirk Lyon, Deputy to the President. Additional greetings were extended in an impressive broadcast of a tape-recorded message from our President, His Royal Highness the Prince Philip, Duke of Edinburgh.

Fraternal delegates Dr. Edward R. C. Walker of Edinburgh, representing the British Medical Association, and Dr. L. Henry Garland of San Francisco, official delegate of the American Medical Association, were then introduced.

The ceremonial recognizing the distinguished services of our elder colleagues involved the conferral of Senior Membership on Drs. G. S. Fahrni of Vancouver, E.

S. Mackid of Calgary, H. G. Young of Moose Jaw, J. D. Adamson of Winnipeg, C. D. Kean of St. John's, Newfoundland, and Senator F. W. Gershaw of Medicine Hat. The following recipients of Senior Membership were not present to receive this award: Drs. G. Darby, Bella Bella, B.C.; T. W. E. Henry, Fort Saskatchewan, Sask.; W. Bapty, Oshawa, Ont.; Alan Brown, Toronto; W. H. Brydon, Brampton, Ont.; W. Dales, Sudbury, Ont.; Annie E. C. Higbee, Burlington, Ont.; John Sheehan, St. Catharines, Ont.; D. H. Ballon, Montreal; Auguste Panneton, Three Rivers, P.Q.; W. M. Jenkins, Gaagetown, N.B.; M. R. Elliott, Wolfville, N.S.; and J. W. MacKenzie, Charlottetown, P.E.I.

Dr. Norman Gosse was then presented with a contribution towards the cost of the high fidelity equipment which he is assembling, in recognition of the quality of his services as Chairman of the General Council, and of the Executive Committee between 1952 and 1959.

The incoming President, Dr. R. MacGregor Parsons of Red Deer, Alta., was installed in office by his

predecessor's deputy, Dr. E. Kirk Lyon. Dr. Parsons extended an official welcome to members and guests attending the 93rd annual meeting, and in expressing gratitude for his election to the Association's presidency, commented that he interpreted this honour as one shared by the Alberta Division as a whole. The newly elected President thanked the members of the Alberta Division, and in particular the Calgary Medical Society and the local committees, for their efficiently conducted and excellent arrangements for the present meeting. After his inaugural remarks Dr. Parsons presented the Past-President's badge to Dr. E. Kirk Lyon, as deputy to the outgoing President.

after which the President's valedictory address was delivered by the Deputy to the President, Dr. E. Kirk Lyon.

Dr. Lyon expressed his regret over the unavoidable absence of our outgoing President, H.R.H. the Prince Philip, Duke of Edinburgh, and recalled the challenge to Canadian medicine voiced by His Royal Highness in his inaugural address a year ago. This challenge to take the lead in campaigning for physical fitness in Canada had set up a chain reaction which the speaker predicted would bear fruit in the future. Dr. Lyon then touched on the highlights of his eventful and historic year in office, the ramifications of our organization as



Four distinguished doctors from England, the U.S.A., Canada and Scotland chat just before the Annual General Meeting. Left to right: Sir Russell Brain, London, who presented the 1960 Osler Oration; Dr. L. Henry Garland, San Francisco, official delegate of the American Medical Association; Dr. E. Kirk Lyon; and Dr. Edward R. C. Walker, Edinburgh, official delegate of the British Medical Association.

The Annual General Meeting adjourned after the National Anthem. Dr. and Mrs. Parsons received in the Riverview Lounge and this was followed by dancing in the hotel ballroom to the music of Moxey Whitney's orchestra.

MEETINGS OF GENERAL COUNCIL

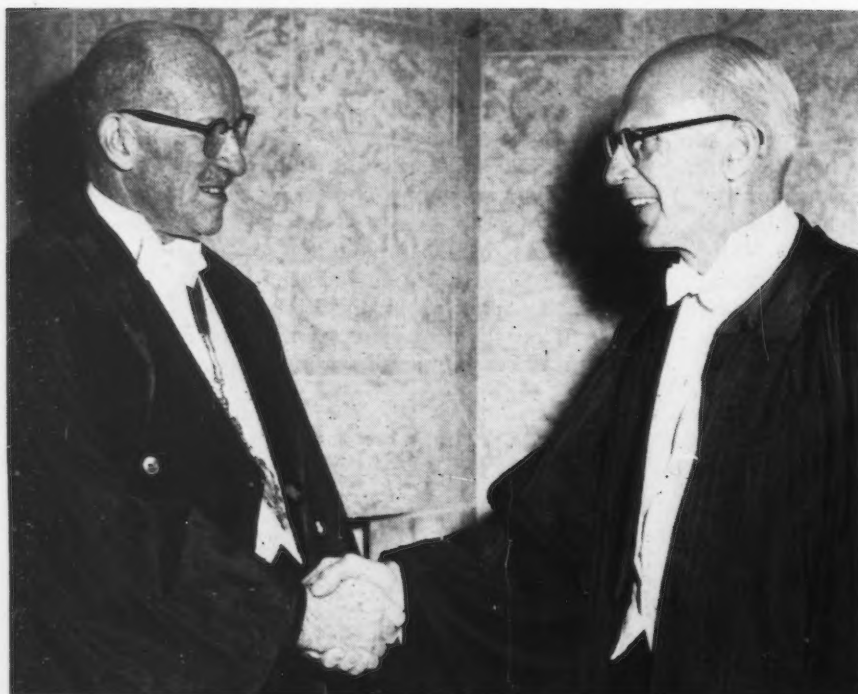
The proceedings of the General Council Meetings held on Monday, June 13, and Tuesday, June 14, have been published in condensed form in the section—"News and Views on the Economics of Medicine" of the July 9 issue of the C.M.A.J. and will appear in detail in the Transactions of the 93rd Annual Meeting in the September 3 issue. Of particular significance and interest in these reports is the official "Canadian Medical Association Statement on Medical Services Insurance".

LUNCHEON FOR MEMBERS OF GENERAL COUNCIL

On Monday, June 13, members of General Council and their wives were guests at a luncheon in the Alhambra Dining Room of the Banff Springs Hotel,

it exists today, and the place of this Association in the future. He pointed out that while the ten Divisions of the C.M.A. are autonomous, and are faced with problems peculiar to their provinces, the parent body should, by correlating the thinking of its Divisions and affiliated societies, formulate broad policies to guide the conduct of our affairs and speak for all facets of Canadian medicine in dealing with our Federal government and in the councils of the world.

He observed that the Association's survey of opinion, in which over 50% of the 20,000 doctors in Canada had participated, indicated basic endorsement by the majority, of principles laid down by the C.M.A. a decade ago regarding the insurance principle in medical economic affairs. This, he considered, made it mandatory that the Association further pursue its activities in this field. In our efforts to maintain the high-quality medical care for which we are known throughout the world we must be extremely vigilant that in further extending the insurance principle which tends to level the cost of medical care, we do not simultaneously level its quality, or replace quality with quantity.



Dr. E. Kirk Lyon, Deputy to H.R.H. The Prince Philip, Duke of Edinburgh, congratulates the incoming President for 1960-61, Dr. R. MacGregor Parsons of Red Deer, Alta.

With reference to the implications of the recent provincial election in Saskatchewan, Dr. Lyon expressed his concern that compulsory health insurance, a matter so intimately affecting the lives of all of us, should have constituted the main issue in a political election, but was encouraged by the fact that our colleagues in that province have opportunity for representation on the planning body which will advise the government on details of such plans as may emerge. This, he felt, would permit expression of the views of organized medicine on matters of health to ensure maintenance of highest-quality medical care, and as well would see to it that any plans which do emerge would maintain the freedom of practice which we guard so jealously in Canada, and any restriction of which must be resisted by a united profession. In order

properly to fulfil our first duty as doctors, namely to care for the sick, there must be no interference from sources which would prostitute our art for purely political purposes.

In commenting on the broad ramifications of public relations, the speaker queried whether, in our enthusiasm to enlighten the public on the advances in our art and science, we sometimes go too far and in so doing, risk the creation of a "race of neurotics". While many of the well-organized medico-lay health agencies provide well-intentioned and conscientious programs of public education, by and large worthy of our support, much of the voluminous literature in the lay press, he felt, was ill-informed and contributed to worries and tensions so common today. He stressed that we should never lose sight of the fact that every

Officers of the C.M.A. discuss details of the 93rd Annual Meeting. Left to right: Dr. M. S. Douglas, Chairman of the General Council and the Executive Committee; Dr. R. MacGregor Parsons, President-elect; and Dr. A. D. Kelly, General Secretary.



doctor is his own public relations officer and that collectively we are the press agents of our own profession. Another potent avenue of public relations, said Dr. Lyon, is the acceptance by members of our profession, of our proper place in society, as community leaders participating in such worthy activities as may present themselves, be they in church, school, hospital, service club, or even the political field.

Noting that some of the topics in his present address, and in those delivered to the Divisions during his tour of duty, had aroused controversy and disagreement, Dr. Lyon commented that this was a risk in-

SOCIAL EVENTS

On Tuesday, June 14, a cocktail hour in the Cascade Lounge of the Banff Springs Hotel provided a social "warm-up" period for the uninhibited, old-time hoe-down which followed, in the form of a western barbecue on the hotel playing field. The Calgary Medical Society outdid themselves as hosts at this delightful evening's entertainment which featured excellent food, square-dancing and fun for all. The numbers of those who blossomed forth in ten-gallon hats, multi-coloured shirts, dungarees, and the fancy



C.P.R. photo

Members of the C.M.A. enjoy a western barbecue at the Banff Springs Hotel. With Judy the mule are: Dr. and Mrs. H. N. Watson, New Westminster; Dr. and Mrs. R. G. Wilson, Vancouver; and Dr. M. Faigen, Richmond, B.C.

herent in the election of officers with minds of their own, not afraid to voice their opinions because of fear of controversy. He issued a plea for the membership to continue to send to their executive committee, men who think, not necessarily the popular members of the Division, but men of high principle, men of courage who are not afraid to make decisions, men with interests broad enough to allow them to have a national and international viewpoint. The executive, and in turn the whole Association, would be just as strong as the men sent to it from the membership. The C.M.A. had been fortunate, said Dr. Lyon, in its choice of representatives on the executive and council this year.

In concluding, the speaker expressed the pleasure and satisfaction which he and Mrs. Lyon had experienced from the performance of their arduous duties of the past year and the friendships they had established across Canada and the United Kingdom which would be cherished long after their physical and mental fatigue had disappeared. He voiced his special thanks to the officers of the Divisions and their wives who had made his tour of office so pleasant, to the Executive Committee for their support and counsel, and to Dr. and Mrs. Kelly and Dr. and Mrs. Peart for their company and assistance during the Canadian and British tours. He trusted that the same courtesy and support would be extended to the incoming President and his wife.

bola ties and neckerchiefs distributed by our hosts, gave mute evidence that the average C.M.A. member is really a cowboy at heart. Fortunately, six-guns were not in evidence. Standing out prominently among this array of gaily attired buckaroos and their gals was the Chairman of General Council, resplendent in his matching tam-o'-shanter, tie and jacket of the tartan of the Black Douglas. Those hardy souls who were not exhausted by such violent forms of outdoor activity, gastronomic and physical, continued the gay social whirl with the more sedate dancing of the ballroom.

On Thursday evening, June 16, the Dalhousie University Medical Alumni Association held a reception and dinner for its members under the presidency of Dr. William Murray of Halifax. A distinguished Dalhousie alumnus, Dr. Walter MacKenzie, Dean of Medicine at the University of Alberta, presided at the dinner. The after-dinner address was delivered by Dr. Chester Stewart, Dean of the Medical Faculty of Dalhousie University. Dr. Stewart described the growth and changing pattern of evaluation of Dalhousie Medical School in recent years, following which a series of colour slides were shown, depicting various aspects of life at Dalhousie and the development of that university. Amusing and ingenious favours were distributed to the guests, including cans containing a mysterious ingredient known only as "Scotia breeze".

LADIES' PROGRAM

An informal program of social activities, sports, entertainment, and sightseeing was provided through the efforts of the Ladies' Committee under the honorary chairmanship of Mrs. R. MacGregor Parsons with the following ladies serving as chairmen of various committees: Mrs. Walter S. Johns, Calgary; Mrs. W. C. Campbell, Medicine Hat; Mrs. T. Melling, Calgary; Mrs. J. R. Francis, Calgary; Mrs. H. W. Price, Calgary;

this service were carried out by the members of the Federation of Medical Women of Canada.

Roman Catholic masses were solemnized at St. Mary's Church, Banff, at 7, 8, 9 and 10 a.m.

PUBLIC RELATIONS EXHIBITS

The three medical public relations displays prepared by the Canadian Medical Association depicted: (1) Various aspects of medical practice which promote



C.P.R. photo

Members of the Women's Committee of the C.M.A. take time out for a chat. Left to right: Mrs. Walter S. Johns, Calgary, general chairman of the Women's Committee; Mrs. K. D. Thomson, Edmonton; Mrs. Haddow Keith, Rochester, Minn.; and Mrs. James R. Francis, Calgary.

Mrs. J. A. Noakes, Calgary; Mrs. P. G. Costigan, Banff; Mrs. K. G. Calvert, Calgary; Mrs. R. W. Fleming, Banff; and Mrs. Lorne Mitchell, Calgary.

Daily morning coffee service in the Riverview Lounge provided opportunity for guests to greet old friends and make new ones while planning the day's events.

The morning of Tuesday, June 14, was occupied by a trip to the top of Sulphur Mountain in the new gondola lift. After lunch the guests were conducted on a tour of the Banff School of Fine Arts, where ballet, music, ceramics, weaving, painting and choral classes were seen in session.

On Wednesday, June 15, the ladies' program continued with a reception and luncheon in the Banff Springs Hotel at which entertainment was provided by a western skit, "Big Red Walkin' Hood", written, produced and narrated by Peggy Miller of Edmonton. The cast for this hilarious pantomime with its hill-billy theme was made up of wives of Edmonton doctors and featured Mrs. Hope Thomson as "Big Red".

An additional feature of interest at the luncheon was the draw for two original paintings by western artist Janet Middleton, A.S.A., C.P.E.

CHURCH SERVICES

On Sunday, June 12, the official Protestant service of the C.M.A. was held in St. George's in the Pines, Church of England, Banff. The lessons were read by Dr. E. Kirk Lyon and Dr. Murray Douglas, Chairman of General Council, and the sermon was delivered by the Rev. George A. S. Hollywood. Arrangements for

the establishment of sound doctor-patient relationships.

(2) Events in the life of the Association during the past year, illustrated by an interesting photographic panorama. (3) Current activities of the C.M.A. of particular interest and concern to members.

MEETINGS OF SPECIALIST SOCIETIES AND AFFILIATED ORGANIZATIONS

The following meetings of specialist societies and of organizations affiliated with the Canadian Medical Association were held in conjunction with the 93rd Annual Meeting:

Canadian Association of Pathologists: Banff Springs Hotel—Friday, June 17, and Saturday, June 18

Canadian Association of Radiologists: Banff Springs Hotel—Saturday, June 11, and Sunday, June 12

Canadian Medical Protective Association: Banff Springs Hotel—Wednesday, June 15

Canadian Psychiatric Association: Banff School of Fine Arts—Thursday, June 16, Friday, June 17 and Saturday, June 18

Canadian Society of Internal Medicine: Banff Springs Hotel—Friday, June 17

College of General Practice of Canada: Banff Springs Hotel—Wednesday, June 15 and Thursday, June 16

Federation of Medical Women of Canada: Arrow Motor Hotel, Banff—Monday, June 13

James Surgical Society: Banff Springs Hotel—Sunday, June 12, Monday, June 13 and Tuesday, June 14

Trans-Canada Medical Plans: Banff Springs Hotel—Wednesday, June 15 and Friday, June 17.

THE PHYSICIANS' ART SALON

The annual Physicians' Art Salon, sponsored since its inception by Frank W. Horner, Ltd., provided a popular feature of the annual meeting for the sixteenth successive year, and constituted the largest exhibition of fine art and photography by Canadian physicians in the history of the event. On display were the paintings, photographs and colour transparencies created by doctors and medical undergraduates from all parts of Canada. The distinguished jury of selection comprising Illingworth H. Kerr, A.S.A., Maxwell Bates, A.S.A., C.S.P.W.C., and Gregory H. Arnold chose the following entries as award winners:

Traditional Fine Art

1st Prize, "Abating Storm"—A. D. Pollock, M.D., Owen Sound, Ont.

2nd Prize, "Pins Tourmentes"—Paul Ouellet, M.D., Quebec, P.Q.

Awards of Merit

"Old 29"—K. Kotlowski, M.D., North Battleford, Sask.

"Old Houses—Vancouver"—W. M. Pfeiffer, M.D., St. Lambert, Que.

"Back Alley"—Donald C. Fraser, M.D., Toronto, Ont.

"Wild Flowers"—Albert Jutras, M.D., Montreal, Que.

"Lake Pelican"—Paul Mari, M.D., St. James, Man.

"Winter Camp"—Mildred F. Newell, M.D., Edmonton, Alta.

Portrait

1st Prize, "Old Man"—M. D. Charendoff, M.D., Toronto, Ont.

2nd Prize, "Feridah"—F. C. Emberton, M.D., Brooks, Alta.

Awards of Merit

"Portrait"—P. Regnault, M.D., Montreal, Que.

"Mexican"—N. D. Abbey, M.D., Hay River, N.W.T.

"Pourquoi"—Pierre Gingras, M.D., Roxboro, Que.

"Classical Head"—F. D. Locke, M.D., Lacombe, Alta.

Modern Fine Art

1st Prize, "Amalfi Coast"—A. Cantero, M.D., Outremont, Que.

2nd Prize, "Semper Fidelis"—S. Rabinovitch, M.D., Montreal, Que.

Award of Merit

"Design for Fishing Boats"—R. V. Worling, M.D., Hamilton, Ont.

"Origin of Evil"—E. D. Kula, M.D., Toronto, Ont.

"Crail Harbour"—W. R. Galloway, M.D., Innisfail, Alta.

"Deserted"—Lionel Marks, M.D., Toronto, Ont.

Monochromes

1st Prize, "Laura Jean"—D. C. Eaglesham, M.D., Guelph, Ont.

2nd Prize, "Stitch in Time"—B. Z. Steine, M.D., Montreal, Que.

3rd Prize, "Hanging Ice"—A. L. Crewson, M.D., Cornwall, Ont.

Award of Merit

"Trio"—F. E. Wait, M.D., Saskatoon, Sask.

"Marksman"—H. F. P. Grafton, M.D., Kamloops, B.C.

"Willow Ptarmigan"—J. G. Beatty, M.D., Uranium City, Sask.

"Dochart Falls"—C. B. Hatfield, M.D., Calgary, Alta.

Palette Club

"Margaret"—H. G. Ross, M.D., Montreal, Que.

"End of the Day"—G. E. Tremble, M.D., Montreal, Que.

Colour Transparencies

1st Prize, "Pilgrim"—B. Z. Steine, M.D., Montreal, Que.

2nd Prize, "Siesta de Pied"—P. J. Portnuff, M.D., Yorkton, Sask.

3rd Prize, "Storm and Serenity"—G. A. Judge, M.D., Burford, Ont.

Awards of Merit

"Typical Tourist"—R. V. Worling, M.D., Hamilton, Ont.

"Pacific Harvest"—R. E. Turner, M.D., Toronto, Ont.

"La Toilette"—P. H. Nash, M.D., Montreal, Que.

"Glasses"—J. G. Campbell, M.D., Windsor, Ont.

"Emerveillement"—René Jutras, M.D., Victoriaville, Que.

"Perplexed at Tuggenheim"—M. Comeau, M.D., St. Laurent, Que.

"Costume Jewellers"—L. P. Ereaux, M.D., Montreal, Que.

"Rundle Reflection"—G. L. Robertson, M.D., Calgary, Alta.

"Caught Napping"—James Hendry, M.D., Brandon, Man.

"Rainy Night"—Yves Castonguay, M.D., St. Laurent, Que.

"Silent Prayer"—H. I. Brown, M.D., Chilliwack, B.C.

"Friend or Foe"—A. C. Cody, M.D., Calgary, Alta.

Popularity Award—Fine Art

"Design for Fishing Boats"—R. V. Worling, M.D., Hamilton, Ont.

Popularity Award—Monochrome

"Hanging Ice"—A. L. Crewson, M.D., Cornwall, Ont.

GOLF TOURNAMENT

The annual C.M.A. tournament was held on Friday afternoon, June 17, at the Banff Springs course. Winner of the Ontario Cup for the 18-hole low gross score (85) was Dr. M. Sereda of Edmonton.

SCIENTIFIC PROGRAM

FIRST GENERAL SESSION

WEDNESDAY, JUNE 15

The first general session opened with a paper presented by Dr. R. B. Cattell on "The Management of Patients with Unsatisfactory Results after Cholecystectomy". Of the small but significant number of patients failing to gain lasting benefit from cholecystectomy about 55% develop a stricture of the common bile duct; 20%, on biopsy, show fibrosis of the sphincter of Oddi which may be associated with a stone in the common bile duct; and in 10% a stone will be found in the absence of a stricture or fibrosing sphincteritis. The remaining 15% present with lesions such as carcinoma of the biliary tree, a large cystic duct remnant, and other uncommon pathological features. In most cases the diagnosis can be made clinically, with the aid of appropriate tests including intravenous cholangiography. Demonstration of a common bile duct wider than 15 mm. is highly suggestive of a common bile duct stone, and a duct 10-15 mm. in width raises suspicions of the presence of such a stone. Dr. Cattell recommends a standard operative procedure which entails excision of the old scar, operative cholangiography in selected cases, mobilization of the duodenum by Kocher manoeuvre, a biopsy of the sphincter of Oddi if fibrosis is suspected, and common duct exploration in the following circumstances: in patients having had jaundice and recurrent chills and fever, when an enlarged common duct is found, when a large cystic duct stump remains, if the patient has multiple episodes of biliary colic, or when many small stones had been present in the gallbladder. A very small common bile duct resisting the passage of dilators necessitates trans-duodenal sphincterotomy followed by long T-tube drainage for two months or more. In cases of stricture, an end-to-end anastomosis of the common bile duct is attempted, followed by cholecystojejunostomy if necessary. Cystic duct stumps and gallbladder remnants rarely cause symptoms unless they are the site of further stones.

Dr. Murray L. Barr discussed "Sex Chromatin, Sex Chromosomes, and Sex Anomalies". In normal anatomic females and certain anatomic males, distinctive chromatin bodies are found in the neutrophil and in the nuclei of cells of the oral mucosa, vaginal epithelium, adrenal cortex, and central nervous system. Because of its availability the oral mucosa is the reference tissue for most workers. Photographs of chromosomes in metaphase allow grouping according to length, size, shape and position, so as to constitute a karyotype. The normal human karyotype has 22 pairs of non-sex-related chromosomes (the autosomes), and one pair of sex-related chromosomes, (the X and Y chromosomes), a total of 46. Chromosomal abnormality is often linked with mental retardation, and certain clinical entities have characteristic karyotypes, such as mongolism, in which there are three rather than two No. 21 chromosomes, and thus a total of 47 chromosomes. Correlation of sex chromatin patterns and sex chromosomal patterns is far from complete. A given individual can be chromatin negative, positive, or double positive (Dr. Barr has seen 10 such patients, all mentally retarded), or in very rare instances show different chromatin patterns in different

tissues, a circumstance described as "tissue mosaicism". Chromatin negative individuals have XY chromosomal patterns (normal genetic males) or X-zero pattern, the so-called Turner's syndrome with ovarian dysgenesis and other congenital anomalies. About one in 500 anatomic males is chromatin positive, having normal autosomes and an XXY sex chromosomal pattern, thus a total of 47 chromosomes. This constitutes the Klinefelter syndrome.

The various aspects of "Blood Coagulation in Acute Renal Failure and Open Heart Surgery" were presented by Dr. Louis Lowenstein of Montreal. Using extensive laboratory studies, renal and liver biopsies, and necropsy examinations, the speaker and his co-workers have attempted to evaluate many factors which might account for the well-recognized yet unexplained haemorrhagic diatheses in patients having acute or sub-acute renal failure. They investigated prothrombin and fibrinogen concentrations, platelet counts, parenchymal liver damage, capillary fragility, thromboplastin generation time, the types of dialyzing machines, and the number and duration of dialyses. As a rule, in both acute and sub-acute renal failure, defects of coagulation do occur which may or may not result in gross haemorrhage. Histological studies suggest that hepatic injury may be one factor. Blood platelet counts fall significantly, and tests quantitatively and qualitatively depending on platelets may become abnormal. Plasma of a patient with acute renal failure has an inhibiting effect on prothrombin consumption. A consistent drop in the platelet count can be demonstrated during or after extra-corporeal circulation in open heart surgery. Such thrombocytopenia corrects itself spontaneously within seven to eight days after surgery, following an initial phase of thrombocytosis. Many of the other factors potentially involved in the haemorrhagic tendencies following open heart surgery relate to the length of time that the bypass is used and the many mechanical problems inherent in the procedure.

SESSION A

WEDNESDAY, JUNE 15

Drugs in the Management of Rheumatoid Disease

Dr. A. W. Bagnall of Vancouver began his address by emphasizing the basic fundamentals of treatment. These included reassurance (since less than 10% of patients with rheumatoid arthritis are crippled), rest and exercise, with physiotherapy, and the specific services that are available from such organizations as the Canadian Arthritis and Rheumatism Society. The speaker then discussed the basic drugs available. Aspirin is the cheapest and still the best. It should be used in amounts of 60 grains daily in divided doses. Indigestion is the only real side effect; it may be overcome by using buffered tablets. Sedatives such as phenobarbital and meprobamate are important. The latter drug is probably more useful because of its mild muscle relaxing action, but its higher cost must be considered. Chloroquine (Aralen) in doses of 250 mg. a day, may produce

minor benefit in two to four months and major benefit in six to eight months. It is of little help in ankylosing spondylitis. Hydroxychloroquine has fewer side effects such as nausea and skin rash, but is more expensive. Cortisone and its derivatives all have serious side effects. Osteoporosis is probably the most serious one in long-term treatment of rheumatoid arthritis. There probably is not much basic advantage in using the newer forms of corticosteroids over prednisone. However, triamcinolone tends to cause a loss in weight, whereas dexamethasone usually produces an increase. Dr. Bagnall then outlined a practical drug program for the management of a patient with rheumatoid arthritis, bearing in mind that physiotherapy and active splinting, etc., constitute the major aspect of therapy. One might start with the maximum tolerated dose of aspirin, to which is added proper sedation, chloroquine and intra-articular injections of hydrocortisone if applicable. If necessary, intermittent prednisone may be added. After four months, reassess the case, and if no improvement is seen, add phenylbutazone. This is given in 400-mg. daily doses for ten days, and if there is improvement, one should carry on with a maintenance dose of 200 mg. a day. If the patient is no better, a course of gold therapy should be attempted and if, in another four months, there is no improvement, one must consider suboptimal continued doses of prednisone. The speaker concluded his paper with an interesting outline of relative costs of the varying drugs used.

Highlights of the Build and Blood Pressure Study, 1959, Society of Actuaries

Dr. F. A. L. Mathewson of Winnipeg reviewed certain statistics gleaned from the files of 26 life insurance companies in Canada and the U.S.A. and relating to about 65% of the insured population. The group selected consisted of those that were not rated for any reason. The average height and weight had not changed much in the past 50 years. Men have tended to become taller and heavier, and women taller and lighter. Still, about 20% of men and 23% of women are considered overweight. There is not much increase in mortality with overweight until the degree of obesity is rather marked, and then the mortality table changes significantly. For instance, when the weight is 25% above normal, the mortality is 200% of that for normal weight. The increased mortality among obese subjects is related first to cardiovascular-renal disease, then to diabetes, and thirdly to gastro-intestinal disease. A family history of degenerative disease is very important. The speaker then discussed the marked increase in mortality with increase in blood pressure. For example, in men aged 40 with blood pressures ranging between 148 and 157 mm. Hg systolic and 88-92 diastolic, there was a 200% increase in mortality in 30 years in cardiovascular-renal disease. Dr. Mathewson closed by pointing out the obvious problem that this group presents to the family doctor and emphasized the need to follow these patients closely.

Hypoglycaemia in Infancy and Childhood

Dr. W. A. Cochrane of Halifax began by stating that hypoglycaemia in children was not uncommon, and that 150 cases had been reported. It is probably commoner than diabetes mellitus in children under

five. He then pointed out the problems which reducing substances other than glucose may present in the determination of blood sugar levels. He classified hypoglycaemia as (1) true or primary, such as is caused by islet cell adenoma or hyperplasia (this is a rare form); (2) secondary to liver disease, endocrine disorders, etc.; and (3) idiopathic. This last group is the commonest and most interesting. Usually the infant is a male and presents with convulsions. The condition is self-limiting and disappears after the age of three or four, but if not recognized may cause mental retardation. The investigation should include blood sugar determination after 12-14 hours of fasting and one and four hours after feeding. Other tests such as blood sugar response to epinephrine, five-hour glucose tolerance test and insulin tolerance test are usually not helpful. Occasionally specific investigations such as study of the effects of ACTH infusion will need to be done for particular indications. Dr. Cochrane then discussed the interesting fact that certain infants with so-called "idiopathic" or "functional" hypoglycaemia fared worse rather than better on a high-protein, low-carbohydrate diet. After giving protein hydrolysates to these infants it was found that their blood sugar was lowered and it was eventually discovered that the amino-acid leucine was responsible for this apparently paradoxical effect, which has also been observed in certain adults who give a history of convulsions in childhood. The therapy for idiopathic hypoglycaemia is usually high-protein, low-carbohydrate diets in those who have a negative leucine tolerance test. Extra carbohydrate feedings 30 minutes after regular feeding may be helpful. Cortisone may raise the blood sugar; the dose can be tapered off and the drug discontinued at the end of three to four years. Ephedrine may be helpful in some cases where there may be a metabolic block and the adrenal medulla produces norepinephrine exclusively. Glucagon administration and pancreatectomy have not been very helpful. A low leucine diet should be tried in those who show a positive leucine test.

A 10-Minute Test of Thyroid Function

Since 1957, Dr. H. Patrick Higgins has investigated patients by giving them a tracer dose of 4 to 10 μ c. intravenously, and recording the radioactivity continuously for 10 minutes with a scintillation counter over the neck. Since this test records only the first few minutes of the uptake of I^{131} , it reflects the trapping mechanism better than the uptakes measured after a lapse of time. Of the 570 patients so tested, 76 were normal. There were 235 patients who were euthyroid but suffering from an anxiety state. In this group the 10-minute uptake was the same as in the normal group. There were 94 patients with non-toxic goitres and these averaged a somewhat higher uptake than the normals, but did not reach the range of hyperthyroidism. In 98 patients with Graves's disease, the average result was 16 times higher than normal and in 33 toxic nodular glands it was 10 times higher. In 40 hypothyroid cases the results were not helpful. The level of protein-bound iodine was determined in all patients; most of them also had a measurement of 24-hour uptake of radioactive iodine. Dr. Higgins feels that this test is useful in the diagnosis of hyperthyroidism and is probably more accurate than the

more conventional 24-hour uptake. It is not helpful in hypothyroidism except in unusual instances such as in some cases of iodine-induced myxoedema.

Drug Therapy for the Psychiatric Patient

Dr. Donald S. Lindsay began by raising the problem of the great numbers of available medications and the difficulties in assessing their effectiveness. The tranquillizers have a mid-brain or brain stem action, and their advantage lies in the fact that they may make the patient less anxious but not sleepy, and so may help psychotherapy. Rauwolfia has been available since 1950, but its disadvantage is that it may precipitate an acute depression, and is very unpredictable in this regard. Its use is now limited to mental hospitals, except in the treatment of hypertension. Phenergan was the first of the phenothiazines and is related to the antihistaminics. Chlorpromazine (Largactil) is a potent antiemetic which reduces excitement but potentiates barbiturates and alcohol, and has the unfortunate side effect of occasionally causing jaundice. It is now used most commonly in mental hospitals for the long-term treatment of schizophrenia. Many other agents in the group (like trifluoropyrazine, thioridazine, promazine HCl, and perphenazine) have about the same general psychic action, with varying side effects. In a miscellaneous group is meprobamate, which has mild muscle relaxing properties and is helpful in tension states but should not be used in cases of alcohol or drug addiction, as patients can become addicted to it. Librium is a new drug that may be helpful in the neurotic depressions with anxiety. It may become an important adjunct of therapy. Among antidepressants, in mild cases, methylphenidate (Ritalin) may be helpful. Amphetamines have a place, but their side reactions limit their effectiveness. The mechanism through which amine-oxidase inhibitors such as iproniazid may help patients with severe depression is not yet fully understood. Imipramine, a drug closely related to the phenothiazines, may be the best drug for the psychotic depressions. It has a latent interval of action but few side effects (dry mouth, tachycardia, hypotension). All patients with serious depressions should be admitted to hospital and often require electroconvulsive therapy and medication.

SECOND GENERAL SESSION THURSDAY, JUNE 16

The 1960 Osler Oration—Osler and Medicine Today

In delivering the Osler Oration, "Osler and Medicine Today", to a crowded hall, Sir Russell Brain recalled his acquaintance with Osler in his undergraduate days. Osler had a keen sense of history and believed that it was only in the light of the past that we could hope to solve the problems of the present and the future. With this in mind, Sir Russell felt that he might best commemorate him by inquiring into the ways in which our problems are illuminated by the development of medicine since his death in 1920, and by his own approach to the problems of his day. After reviewing the striking advances of the last 40 years, in which he emphasized the role played by

specialization, Sir Russell stated that the most revolutionary change has been in the development of a dynamic concept of pathology. Paradoxically the specialist, more and more, looks outside his specialty for explanations of the disease processes which concern him. How Osler would have relished the discovery that sickle-cell anaemia is due to a genetic fault which alters the amino acid in the haemoglobin molecule!

The very successes of medicine, however, have created new problems of which the increased incidence of diseases associated with old age is but one. These successes, too, have altered the popular conception of health so that unrealistic hopes for longevity and freedom from disease are widespread, but Sir Russell pointed out that inasmuch as there are a thousand ways of being sick, to be healthy one must be well in a thousand ways. Medicine may point the way to avoid one particular disease but it is another matter, possibly involving questions of values outside medicine, to persuade people to accept that way. Yet it might be that by the same token that the specialist is nowadays compelled to take a more comprehensive view, so in medicine generally we are obliged to concern ourselves with aspects of medicine strictly outside its scientific framework. Thus, sociological questions, politics and the problems of human conduct in relation to the law are of increasing concern, and demand consideration of our own presuppositions with some philosophical detachment.

Finally, referring to the problems of medical education, Sir Russell spoke of "the malignant hyperplasia of curricula". Medical education should not aim at producing a finished product of any kind, but at developing in the student those basic principles and skills which he will later be able to apply to learning whatever he needs for further work in his chosen field. For, as Osler said, "The hardest conviction to get into the mind of a beginner is that the education upon which he is engaged is not a college course, not a medical course, but a life course, for which the work of a few years under teachers is but a preparation."

Neurological Lesions of the Newborn: Long-Term Follow-up

It is generally believed that delayed respiration at birth is responsible for later neurological difficulties, including mental retardation and cerebral palsy. After reviewing the literature, Dr. Haddow Keith presented the results of a long-term controlled follow-up study. In this study he found that prolonged labour, and delay in onset of infants' respiration with asphyxia livida or pallida, up to a period of 20 minutes, caused no observable neurological lesions in those who survived. In the same groups of children there was no increase in the number with convulsions when followed up from eight to fourteen years; and the I.Q.'s were not reduced when compared with the controls.

Mitral Valve Insufficiency—A New Surgical Field

Dr. Raymond O. Heimbecker illustrated his lecture with an excellent colour film giving details of the surgical procedure of valve plication. He stressed that earlier operative treatment is preferable, and that in a number of instances preoperative work-up, including cardiac catheterization, might be carried out

on an outpatient basis. His paper included details of a hypothermia and heat control unit which permits the patient to leave the theatre normothermic, and which is now becoming standard equipment.

SESSION A

THURSDAY, JUNE 16

Childhood Obesity

After reviewing the physiological mechanisms involved in obesity, Dr. Donald Wilson stressed the importance of emotional factors in determining the child's eating habits, and in particular the relationship of the child with its mother, the latter indeed being of overriding importance. He stressed that no alteration of internal secretion is sufficient to produce obesity without overeating.

The Clinical Significance of Small Bowel Function

After describing disturbances in function of the small bowel under the three headings of (a) disturbance immotility, (b) in digestion and secretion, and (c) in absorption, Dr. R. D. McKenna proceeded to consider the malabsorption syndrome. His account of the causes of this syndrome constituted a scholarly review of the literature and, indeed, the paper was enriched by over 90 references. The complex interdependence of fat and carbohydrate metabolism, vitamins, minerals and electrolytes was illustrated by a chart which is likely to constitute the student's guide for some time to come.

The Importance of Cardiac Catheterization in the Infant Cardiac

Dr. Doris Kavanagh stated that the purpose of her presentation was to stress the safety, ease and importance of early and accurate diagnosis in the management of the cardiac infant. There is a gradual weeding-out of those infants unable to survive cardiac defects through the early months of life, so that by the age of two years it is usually the patients with more simple defects who remain. Empirical waiting until the age of two or three often serves only to prove the relative innocence of the defect, the more serious cases failing to survive. The material on which this report was based comprised 200 infants under the age of two, subjected to cardiac catheterization by the author. The youngest was nine days old and 4 lb. 5 oz. in weight. Neither size nor seriousness of illness constituted a contraindication to cardiac catheterization, with the exception that in those in obviously moribund states, catheterization produced equivocal data. The technique was the same as in older children except that the right saphenous or superficial femoral vein might be preferred, especially as these sites permit easier entry of the left atrium and ventricle. At completion the vein was usually ligated. Apart from demonstrating amenable defects such as patent ductus, coarctation of the aorta, severe pulmonary stenosis and tetralogy of Fallot, the procedure occasionally established a correct diagnosis, thereby avoiding an unnecessary or dangerous operation.

Health Problems of the Arctic

Dr. J. A. Hildes pointed out that many of the problems of health in the Arctic lie in the field of social and preventive medicine rather than being attributable to the rigours of the climate itself. Enteric diseases have a persistent high morbidity, a fact which is attributable to the poor standard of sanitation, although in this instance climate does play a part, as permafrost makes sewage disposal difficult. Serology studies show Eskimos to have high exposure to poliomyelitis, herpes and adenovirus infections. Ultraviolet light conjunctivitis followed by secondary infection is common, although Eskimos long ago developed slit goggles for protection against the glare on exposed snow. Hydatid disease is found in several areas and is endemic amongst the caribou hunters where wolves complete the parasitic cycle. Whether Eskimos have significantly less arteriosclerosis is not proven. A number of cases of malignant growths have been described in members of this race. Possibly the most specific effect of the Arctic lies in the psychological sequelae of isolation, and it is, of course, the white settlers who suffer most from this.

Management of the Respiratory Cripple

Dr. J. Merriman delighted his audience with his use of stamps and the epidiascope to illustrate his points. He favoured the use of potassium iodide as an expectorant for the patient with chronic bronchial infection, and suggested that a short course of antibiotics might still be indicated, although sputum testing might reveal no pathogens. He warned against excessive use of oxygen and emphasized that it should be employed only intermittently. There is still no substitute for adequate postural drainage when indicated, and breathing exercises can frequently effect much benefit.

Many patients still fail to employ a nebulizer correctly even after long usage. In using this instrument, it is important that the patient should exhale completely, hold his breath and then squeeze the nebulizer before inhalation. For those with emphysema and pneumonia a tracheal fenestration might be indicated, and this offered the double advantage of decreasing the dead space and permitting the patient to carry out suction himself. The patient crippled by chronic respiratory disease following poliomyelitis might also be helped by breathing exercises and instruction in the "frog" method of breathing in which the tongue is used to force air down the trachea.

SESSION B

THURSDAY, JUNE 16

The Traumatized Chest

Dr. H. Meltzer spoke on "The Traumatized Chest", commenting that chest injuries have increased greatly in recent years as a result of the greater incidence of automobile accidents. The importance of such injuries lies in the fact that they are often fatal. Establishment of an adequate airway is the first essential measure to be taken after gross external haemorrhage has been arrested. If the airway appears clear, but respiration is still inadequate, a tension pneumothorax should be suspected and, if present, treated by closed needle aspiration. A chest with multiple rib or sternal fractures is unstable and requires immobilization with hand pressure until it can be supported by strapping.

Definitive treatment of the flail chest rests on external fixation with traction. Wires can be placed around the ribs; towel clips can also be used. Outward traction is maintained with pulleys and weights. If retained secretions threaten to be a problem in a patient with an impaired cough reflex, tracheostomy is imperative.

Manipulation in Back Pain

"Manipulation in Back Pain" was discussed by Dr. W. B. Parsons, who decried the faith that has been put in this form of therapy by patients and practitioners who restrict their treatment to it. As is well known, many tragedies result from ill-advised manipulation, and definitive treatment for potentially fatal conditions is unnecessarily delayed. On the other hand, he pointed out that there are indications for manipulation in the back as well as in other anatomic regions. It requires experience in selecting those patients who might be benefited, and skill in performing the manipulation. The speaker presented this controversial subject extremely well.

THIRD GENERAL SESSION FRIDAY, JUNE 17

A Three-Step Method for Diagnosis of Solitary Pulmonary Nodules

Dr. Henry Garland advocates a three-step method of clinical appraisal of patients with radiographic evidence of solitary pulmonary nodules, to avoid the hazards of thoracotomy and biopsy. The three steps involve (a) full radiological examination followed by (b) clinical examination and (c) laboratory examination. One hundred and six cases were charted after investigation in the manner suggested, and diagnoses were correct in 100 of the 106 (proved by operation). This method is regarded as useful in expediting sound surgical procedures in cases regarded as malignant and in obviating needless thoracotomy in those diagnosed as benign.

Governments and Doctors

Dr. Edward R. C. Walker is Scottish Secretary of the British Medical Association and spoke with authority on his subject. Health services tend to be constructed on empirical grounds in which the considerations are largely political and economic rather than medical, and it is pertinent to ask whether this state of affairs is inevitable. It would appear that the relationship between organized society and the medicine man is as old as history itself and, with considerable consistency, has been a relationship between two independent groups. This is exemplified by the Platonic concept that it was the task of the politician to look after the body politic and the task of the physician to look after the body personal. There is no doubt that the National Health Service in Britain has achieved a great deal, yet that does not necessarily mean that the present structure is the best for the job. Indeed, after mentioning administrative and interpersonal difficulties to which it gives rise, Dr. Walker cited an economist's recent report which suggests that the benefits presently achieved could have been realized more economically under other auspices, leaving additional resources for use in other areas. He stated his opinion that there is no reason to suppose that management of the service by government offers really worth-while advantages

to offset its manifest disadvantages. Dr. Walker concluded with the suggestion that the Department of Medical Economics of the Canadian Medical Association was well suited to collect and collate accurate information on Health Services administration which could provide a reliable basis for thinking by all who are concerned with these pressing problems.

The Threat of the Modern Laboratory to the Art and Science of Medicine

After remarking on the way in which laboratory investigations multiply from year to year in a university hospital, Dr. I. M. Hilliard recalled the suggestion of a friend that his paper should be entitled "The threat of the clinician to the modern laboratory". In presenting one of the major themes of his address, Dr. Hilliard commented, "The threat of the modern laboratory develops because it has become so essential to us by providing accurate diagnoses easily in difficult diagnostic conditions. We are lulled into a state of apathy and uncritically turn over to the laboratory responsibilities which are really those of the physician."

ROUND TABLE CONFERENCES MODERN CONCEPTS OF THE MANAGEMENT OF ALLERGY

The first of the nine Round Table Conferences included on the scientific program this year was devoted to "Modern Concepts of the Management of Allergy". Dr. J. D. L. FitzGerald (Chairman) introduced the subject by defining a few terms and stated his intention to deal primarily with the "immediate" type of allergy. This is exemplified by the patient presenting with atopic lesions and a family and personal history of allergy. He may suffer from respiratory allergy or urticaria that manifests itself in a histamine-like reaction. Dr. Jacques Léger discussed hay fever as the prototype and stressed the importance of history in diagnosis and management. Hay fever is an entity that occurs annually at the same time of the year, provided the patient stays in the same environment. Dr. C. H. A. Walton followed with a consideration of laboratory aids in the diagnosis of respiratory allergy. He felt that sinusitis was overstressed, but that chest and sinus radiographs were valuable adjuncts in any initial work-up. The characteristic watery discharge may be the most important sign, especially if one is considering infections in the differential diagnosis. An eosinophilia is common, both in blood and secretions.

Dr. Mitchell discussed the neglected group afflicted with recurrent perennial vasomotor rhinitis. Dr. T. H. Aaron dwelt on the treatment and management of respiratory allergy. Trigger mechanisms such as changes in temperature, barometric pressure, smoke and psychogenic influences should be considered. Dust-proofing and provision of foam-rubber pillows are helpful prophylactic measures; house plants, animals and other possible sources of allergens should be removed if necessary. Hyposensitization should help 80% of those with hay fever. It is less helpful in asthma and vasomotor rhinitis. Antihistaminics are beneficial in hay fever but useless in asthma. Ephedrine preparations, aerosols, and mucolytics may help in asthma.

Dr. FitzGerald then stressed that over-treatment as well as under-treatment can cause failure in a hypo-

sensitization program. He also felt that "one shot" (repository) therapy was not safe yet and should remain an experimental tool. Dr. Walton felt that adrenal steroids should never be used, except topically, in vasomotor rhinitis, and, in general, should not be used in allergic conditions except when all other methods of control have failed.

The group then concluded with a discussion of urticaria. They felt that foods were an important cause in children, and accounted for the relatively benign form of acute urticaria. Psychogenic causes certainly contributed greatly to chronic urticaria; this group of patients may be benefited by the ataractics.

PHYSICAL FITNESS

"Physical Fitness" was discussed by Drs. M. Carpendale, R. S. Fraser, M. Van Vliet and G. E. Duff Wilson, with Dr. O. Rostrup as Moderator. The ability to perform certain physical exercises is but one facet of the broad term "physical fitness". While agreeing upon this, the panel members could go no further in attempts to define accurately "physical fitness". They were anxious that the Canadian Medical Association assume a role of leadership, however, in national efforts to educate people towards staying fit and healthy. Without agreement as to definition of terms, it followed naturally that tests to assess fitness were few and controversial. Dr. Robert Fraser discussed some of the cardio-pulmonary tests, which were in turn criticized by Dr. Carpendale because such tests fail to assess locomotor potential. He cited the shocking discovery that New York school-children were unable to perform the few exercises in a European test which was to have been used in a long-range study of this problem. Dr. Van Vliet felt that all current tests shared the failing that they were the by-products of research started for other purposes and he deplored the lack of serious specific study of physical fitness.

The moderator challenged the panellists to defend the value of keeping fit. Dr. Fraser, while citing a study of British bus drivers and conductors, pointed out the many factors other than exercise involved in such studies, and cited dog experimentation in which the less active dogs suffered less severe coronary artery disease than the more active. Dr. Carpenter believed that many chronic locomotor disabilities were encouraged by lack of fitness, namely flat feet, loss of spinal mobility and many others. Notwithstanding the apparent lack of supporting evidence, panel members agreed that fitness was with the best interests of good health.

The role of physical exercising in the maintenance of fitness was much debated. Dr. Van Vliet contended that stopping physical education as presently practised in Canadian schools would not affect the physical health of the children. Both he and Dr. Carpendale agreed that physical education (a much broader concept than that of exercises alone) should be begun in pre-school years and continued through elementary and high schools and afterwards to prevent the development of locomotor disabilities such as loss of elasticity of the spine, and to encourage development of specific physical skills such as swimming.

Dr. Rostrup suggested that time, leaders and facilities were needed to accent future progress in the field of fitness. Dr. Wilson felt that facilities were available now but were being poorly used. He stressed the futility

of trying to legislate people into being physically fit, and cited the failure of the Physical Fitness Act of 1944. He believed that education of the public in the desirability of maintaining such a state of fitness was the most important challenge, and was one that should be met by the Canadian Medical Association.

In summary, Dr. Rostrup agreed that public education must emanate from some source, and that the C.M.A. might well take up this task. During the general discussion which followed, Dr. Fraser recommended walking as the best all-round exercise. Dr. Fridell of Minneapolis mentioned current work attempting to relate the observable attributes of muscle to specific tissue permeability. Dr. Van Vliet concluded the presentation with the interesting suggestion that people can be "under-muscled" as well as "over-weight".

NEW DEVELOPMENTS IN CARDIAC SURGERY

The purpose of the panel on "New Developments in Cardiac Surgery" was to describe the present status of surgical treatment of heart disease. The members confined their remarks to the more common congenital problems and discussed rheumatic valvular heart disease. The panel was chaired by Dr. R. S. Fraser.

Dr. Peter Allen described the history of heart surgery and drew attention particularly to the advances resulting from development of extracorporeal circulation and hypothermia. Both these methods have been widely used only for the past five years. Drs. Gordon Cumming and Doris Kavanagh described the medical evaluation of patients operated upon for ventricular and atrial septal defects. It was pointed out that pulmonary hypertension due to a marked increase in pulmonary vascular resistance precluded operation, although a decrease in pulmonary pressure could be expected if pulmonary hypertension was being maintained by increased flow. Dr. Allen believed that there was still a need for aorto-pulmonary anastomosis in infants suffering from tetralogy of Fallot. Although Dr. Callaghan agreed that this might be true at present, he thought that complete repair would soon be possible at all ages. Dr. Kavanagh stated that the significance of aortic stenosis was being overlooked in many cases and made a plea for left ventricular catheterization.

It was agreed that mitral insufficiency could now be corrected by one of several methods and that results of aortic commissurotomy were improving. The difficulty of repairing aortic insufficiency was acknowledged and the need for a more satisfactory artificial valve was stressed. In answer to a question from the floor, both surgeons stated that there was no really satisfactory operative treatment for coronary artery disease at the present time.

CANCER OF THE BREAST

"Cancer of the Breast" formed the topic of a lively round table conference centred principally on questions from the audience. The framework of subsequent discussion was defined by the chairman, Dr. W. C. MacKenzie, who defined staging of breast lesions thus: stage I, operable and localized; stage II, operable with disease present in the axilla; and stage III, inoperable because of metastases. Several lesions were discussed

with specific cases as examples. In the stage I lesion without visible metastases, Dr. Cattell emphasized that triple biopsy should be carried out. The question of prophylactic oophorectomy was raised by Dr. Hatfield, but it was the consensus that castration should not be done until metastases were evident.

The problem of lymphoedema was discussed. Though often associated with prior radiation therapy, infection or venous thrombosis, the etiology remains obscure. It was felt by Dr. Harrison that the likelihood of its occurrence bore no relation to the extent of the dissection, but that support of the limb and avoidance of infection were useful prophylactic measures. Some methods of treatment were mentioned by Dr. Cattell. Included were intermittent positive pressure pumps applied to the affected extremity, hyaluronidase injections, and administration of fibrinolytics, on which to date there are few published reports.

In dealing with breast cancer in the pregnant patient it was felt that the treatment had to be individualized, as the management varied with the duration of the pregnancy. Termination of pregnancy was of no benefit, and in the case of operable lesions pregnancy did not appear to be a contraindication to mastectomy. All agreed that it was an urgent problem best solved by the co-operation of a team comprising surgeon, obstetrician, radiotherapist and internist.

Palliative treatment of the inoperative stage III patient received considerable comment. Dr. Ash felt that early radiation often rendered large ulcerated and inflamed lesions amenable to surgical attack. Further, there was some evidence that preoperative radiation may decrease the incidence of metastases following operation, and a better response to radiation is generally obtained before the disruption of the blood supply caused by mastectomy.

Mere biopsy of a breast lesion without frozen section was condemned, as it implies repeated anaesthesia with increased morbidity. Needle aspiration of a suspected cyst was regarded by Dr. Harrison as being adequate for diagnosis provided that rigid criteria were met—namely, that the patient was to be seen again, that there were no cells in the aspirate, and that the procedure left no residual mass. Dr. Cattell observed that adrenalectomy was generally felt to be outmoded because of the difficulty in selecting patients who may benefit from it and the added risk of the operation, when chemical adrenalectomy with prednisone appears to be equally effective. Dr. Harrison observed that some workers regard adrenalectomy as unnecessary although others continue to employ it.

The experts were undecided as to the usefulness of hypophysectomy. There was some evidence that it is a better procedure than adrenalectomy, but Dr. Ash observed that there was considerable morbidity with both radon or yttrium implantation, and transfrontal craniotomy.

Hormone therapy was discussed briefly. Oestrogen administration for at least five years was the treatment of choice of menopausal patients and for those with metastases to the soft tissues. Androgens were equally useful in the treatment of bony lesions. The latter, Dr. Hatfield emphasized, might produce hypercalcaemia, and it was advisable to check serum calcium levels during therapy to detect this complication in good time. Corticosteroids appeared useful in the management of this complication and prednisone in particular was felt

by some to surpass both hypophysectomy and adrenalectomy in the treatment of breast cancer.

Dr. MacKenzie concluded that the treatment of breast cancer still left much to be desired.

ORAL DRUG THERAPY IN DIABETES

With Dr. J. M. Kilgour in the chair, a panel of specialists discussed "Oral Drug Therapy in Diabetes". Dr. Wilson introduced the topic by emphasizing that therapy is directed at relieving symptoms, restoring normal physiological mechanisms and normal nutrition and maintaining good health and a normal life expectancy. No relaxation in these criteria should be tolerated in evaluating oral therapeutic agents. Patients using them probably need more education in the treatment of this disease, and no one knows the complications which may arise from long-term use. Dr. Brown felt that patients over 40 years of age with mild diabetes should exclusively be the group that may be treated with oral agents. Good control should be the objective in every case. He stressed the importance of testing the urine after meals and of reverting to insulin if good control cannot be obtained. Dr. Moorehouse discussed the possible physiological action of these oral agents. The sulfonylureas (tolbutamide, chlorpropamide) need functioning beta cells (and thus available insulin) to be effective. They may act by stimulating the beta cells to release insulin. The biguanides (like D.B.I.) have nothing to do with insulin release and may affect cell metabolism in the peripheral tissues. Dr. Brown discussed the selection of patients for oral treatment. They included those over 40 years of age usually, who are obese and whose diabetes is of recent onset, and are free from degenerative complications, unless those complications are stationary. He felt that the tolbutamide response test was useful and outlined the method.

Dr. Leibel discussed the various degrees of effectiveness of the sulfonylureas. Tolbutamide had been used for four years and had not proved to be toxic. With high doses (over 0.5 g. per day) liver toxicity had been reported with chlorpropamide. Tolbutamide was detoxified in the liver and chlorpropamide was not, which accounted for the latter's somewhat longer action. Secondary failure developed in 18 months in 30% of patients on tolbutamide. Chlorpropamide would work in 25% of these failures. He advised using tolbutamide first and if it failed, changing to chlorpropamide. There was no evidence that tolerance to the above drugs ever develops.

Dr. Moorehouse felt that in any severe infection or with any evidence of ketosis, the oral agent should be temporarily abandoned. Before operation and during pregnancy it was best to switch to insulin. Dr. Leibel discussed the action of D.B.I. and felt that in general it should be used in combination with insulin in younger diabetics whose disease is usually severe, labile and difficult to control. He mentioned the high percentage of side effects (in particular, nausea and anorexia) and the importance of using small doses with very gradual increments. There might be some milder forms of diabetes that do not respond to the sulfonylureas, and might respond to D.B.I. In general, it had been unsatisfactory when used alone in the younger diabetic. Dr. Brown suggested that D.B.I. might be used in combination with insulin in labile brittle diabetes of youngsters, patients with low renal thresholds for glucose, patients with insulin resistance and patients with epilepsy.

HORMONE THERAPY IN GYNÆCOLOGY

Dr. Brown opened the conference by discussing his management of primary amenorrhœa. He stressed the importance of reassuring the adolescent patient. If a careful examination had ruled out local causes, a diagnostic curettage should be done. However, Dr. MacLennan felt that a diagnostic curettage should not be done in this young age group. Dr. Thomas, the chairman, mentioned the danger to the internal os resulting from dilatation of the cervix in the nulliparous woman. Dr. Anderson emphasized that progesterone would cause bleeding from an œstrogen-primed endometrium only. If after progesterone there was no bleeding, then cyclic œstrogen and progesterone might be used in selected cases for its psychological effect and also in an attempt to reinstitute pituitary-ovarian harmony.

Dr. Dawson discussed the problem presented by the hirsute woman. All women with virilism and hirsutism have a pathological condition that needs to be investigated, either adrenal disease or ovarian masculinizing tumour. Hirsutism in the majority of women had no known etiology, although attempts were being made to clarify the picture with intensive urinary hormonal analysis. In general, the treatment in this latter group was reassurance and local treatment. Dr. MacLennan stressed the nocturnal hot flushes as a true indication of the hypœstrogenic state. The preferential treatment was sedation: if œstrogens were used, cyclical administration of diethylstilbœstrol was the drug of choice.

Functional uterine bleeding was best controlled by progesterone during puberty and by stilbœstrol in the adult years. The use of androgens was controversial; diagnostic curettages were recommended. Dr. Brown felt that menorrhagia in the menopausal group should be treated by hysterectomy. Suppression of ovulation by exogenous hormonal action should rarely be used as the treatment of dysmenorrhœa. Endometriosis can be managed by creating anovulatory cycles through the action of the new progesterone-like substances. Dr. Dawson pointed out the danger of using such synthetic drugs with androgenic activity in pregnancy.

Dr. Anderson felt that, in general, hormones were valueless in the treatment of habitual abortion unless a deficiency of progesterone could be proved by the determination of urinary pregnanediol levels. Dr. Brown felt that there was no place for hormones in the treatment of premenstrual tension and that contraception by ovulatory suppression was interesting but still speculative. In infertility, hormones were usually useless, but in some patients who showed poor progestational response by the ferning pattern of their cervical mucus, progesterone might help. Dr. Dawson believed that an attempt should be made to assess a patient's thyroid status before giving thyroid empirically. Triiodothyronine was no more effective than ordinary thyroid extract, was much more expensive and rendered certain laboratory tests, such as the estimation of protein-bound iodine, unreliable.

SECTION OF GASTROENTEROLOGY

The Section of Gastroenterology met under the chairmanship of Dr. R. D. McKenna of Montreal. The first paper was presented by Dr. J. A. L. Gilbert and dealt with "Post-Gastrectomy Problems". The results of partial gastrectomy are eminently satisfactory in

some 85% of cases. Partial gastrectomy may, however, be followed by the dumping syndrome and failure to gain weight. The dumping syndrome is associated with epigastric distress, sweating, nausea and occasionally vomiting which comes on during or immediately after a meal, and is relieved by lying down. The speaker believes that this syndrome, or the fear of it, leads to a reduction in food intake and is therefore a common cause of failure to gain weight after partial gastrectomy. Complete metabolic studies have confirmed the fact that such postoperative failure in gaining weight is usually the result of failure to ingest adequate calories rather than of malabsorption. Studies presented by Dr. Gilbert indicate that patients who are considerably below their normal weight preoperatively do not gain weight postoperatively. Similarly, a majority of those who are obese retain their weight after surgery, while those of normal weight may gain or lose after the operation. With regard to treatment, the diet of milk and alkalis which is the sheet anchor of preoperative treatment should be avoided postoperatively, both for physiological and psychological reasons. Following surgery, patients should be instructed to eat frequent, dry, small, high-protein meals.

Dr. D. A. Fee spoke on "Photoscans of the Liver". Radioactive rose bengal dye injected intravenously in a dose of 3 mc./kg. of body weight is picked up very quickly by the liver. At arbitrary intervals, a scanning scintillation counter registers autoradiographs of the liver, which may prove helpful in the evaluation of upper abdominal masses not identified with certainty in the usual roentgenograms of the stomach, bowel, gallbladder and kidneys. This method is without known hazard, and does not interfere with usual liver function tests or with other radioisotope studies, because the dose of radioactivity is small and relatively well concentrated. Dr. Fee showed photoscans characteristic of the following situations: normal liver, low-lying liver due to emphysema, Riedel's lobe, hepatomegaly due to congestive failure, and areas of metastatic malignancy secondary to uterine leiomyosarcoma, carcinoma of the gallbladder, and carcinoma of the pancreas. Postnecrotic cirrhosis can be confused with metastatic malignancy by this technique, but serial photoscans will better delineate metastatic deposits, provided they are over 2 cm. in diameter. The speaker did not attempt to compare the diagnostic accuracy of this procedure with that of the tests listed above, for it is a test designed to supplement other methods of examination, not supplant them. Nor did he make comparisons with percutaneous liver biopsy.

"The Significance of Jaundice in Acute Pancreatitis" was discussed by Dr. D. R. Walcott. Observations on 63 cases of acute pancreatitis provided the material for this report; he did not outline his criteria for inclusion of the cases selected. Because in 26 of 41 patients so examined the hæmoglobin level was higher than 100%, he suggested that hæmoconcentration as indicated by such an abnormal finding could be used as an indication of the severity of the disease. However, no mention was made of the duration of symptoms before the hæmoglobin estimation, or the degree of severity of the clinical symptoms during this interval. There is no argument to prove that early and adequate fluid replacement is a vital part of treatment. The serum amylase level was of little diagnostic help in this series. Surgery was performed on 22 patients, three of whom died. Usually in addition to laparotomy,

cholecystotomy was performed, and it is the current practice at Shaughnessy Hospital, Vancouver, to do biliary drainage whenever a laparotomy reveals unsuspected acute pancreatitis, or when a jaundiced patient believed to have acute pancreatitis fails to respond to medical management. Only three of the 14 jaundiced patients in this series died, and none had common duct stones at necropsy. Of the six cases known to have stones in the common bile duct, five died. The mortality rate was about the same in patients with associated biliary tract disease as in those without this complication. Dr. Walcott felt that this review had neither condemned nor defended the worth of cholecystotomy in the treatment of acute pancreatitis.

The session included a panel discussion on "Intestinal Malabsorption" with the chairman as moderator and in which the participants were Drs. Louis Lowenstein, D. G. Kinnear, D. J. Buchan and John M. Finlay. This excellent and comprehensive discussion began with a classification by Dr. Kinnear of the many causes of this syndrome, namely the diseases in which the absorptive surface of the bowel is diminished, those in which there are deficiencies of bile and digestive enzymes, and those in which various substances are destroyed before absorption. Discussing the many symptoms possible, he stressed the frequency of diarrhoea, which is so common and results in a loss of calories available to the body, with subsequent weight loss and weakness. Over 85% of patients complain of each of these cardinal symptoms. Demonstrable weight loss is the most consistent sign; abdominal distension, oedema, hepatomegaly or hypertension afflict one-third of the patients, and melanosis, clubbing, and generalized lymphadenopathy are encountered. No laboratory test has yet supplanted accurate stool balance studies. According to Dr. Finlay, many less odious procedures are helpful, especially a thorough history-taking. Staining of a stool specimen for fat globules, measurement of the serum proteins, calcium and carotene, determination of prothrombin time, analysis of duodenal aspirate, roentgenograms of the abdomen, stomach and small bowel, and tolerance tests to orally administered vitamin A, glucose and dextroxylose are all valuable. Radioisotopic tests using tagged fats and fatty acids have been disappointing. Dr. Lowenstein pointed out the possibility of a deficiency of any or all of vitamin B₁₂, folic acid, ascorbic acid, pyridoxine and iron, thus accounting for various abnormalities of the blood. Often a macrocytosis in the peripheral blood smear and a megaloblastic marrow are found; histamine-fast achlorhydria is common. However, the Schilling test shows no increased absorption of vitamin B₁₂ even when intrinsic factor is added, in contrast to the usual finding in pernicious anaemia. Using illustrative roentgenograms, Dr. M. J. Smart listed the specific radiological features as regional enteritis, blind loops, large jejunal diverticulæ; and the non-specific signs as small bowel dilatation, coarse mucosal folds, dilution of the barium, and clumping and flocculation of the barium. He recommended the use of micropulverized barium for such studies. Dr. D. J. Buchan showed the findings on a biopsy specimen of small bowel, now believed to be characteristic of non-tropical sprue; a loss of villi and of the "saw-tooth" border of villi, disorganization of the epithelial cell nuclei, and a mononuclear and eosinophilic cellular infiltration of the

epithelium and sub-epithelial layers. These changes cannot be correlated with the severity of the disease, nor is there significant change in these histological lesions during clinical remissions. The many facets of treatment are aimed at replacement of deficiencies, elimination of the underlying causes, and treatment of the symptoms and complications. Although the "gluten-free" diet is of great value in many patients, it is rigid and difficult to follow for long periods. Corticosteroids should be used cautiously, only after conventional therapy fails to induce a remission. Dr. Lowenstein added to Dr. Kinnear's remarks on treatment by recommending the use of small therapeutic doses of vitamin B₁₂ parenterally, followed after several weeks by therapeutic doses of folic acid. This program helps to diagnose the dominant deficiency and initiate treatment at the same time. Iron is often required as well. Vitamin K must be given in a water-soluble form. Before any surgical correction of small bowel anatomic derangement, both vitamin B₁₂ and a course of a broad-spectrum antibiotic should be administered.

SECTION OF MEDICAL ECONOMICS

A panel discussion on "The Future of Voluntary Pre-payment Mechanisms in the Health Care Field" was included in the evening session of this section. The moderator was Dr. J. A. McMillan of Charlottetown, and the participants were Dr. E. C. McCoy and Messrs. C. A. Naylor, G. F. Ferguson and B. E. Freamo.

After brief introductions by the panel moderator, the discussion began with comments by Dr. E. C. McCoy of Vancouver. He observed that today there is increasing evidence of a desire for security; to reach this end, people seem to prefer to be government employees and demand that the state provide all. He deplored our apparent preoccupation with fringe benefits, and the fact that society lives on next week's pay cheque. This state of affairs has led some government leaders to suggest compulsory government sponsorship of medical care. Dr. McCoy felt that this would result in national softness, and contrasted government-sponsored plans with voluntary pre-payment schemes, which are not compulsory and do not claim to be "free". He observed that voluntary pre-payment was more than a stop gap, that it could encourage good practice, and that it would avoid "political medicine". It must, however, be reasonable in cost, cover all groups including the aged, the unemployed as well as the employed, and must, above all, be supported by the medical profession as well as the government. In conclusion, he observed that leadership must come from the profession in stimulating movement of insurance underwriters into a new risk field, and in the establishment of controls for all participating parties.

A representative of the London Life Insurance Company, Mr. C. A. Naylor, reported on the future of voluntary health insurance plans. He outlined the growth of medical insurance from the basic plans, which failed to provide coverage outside of hospital and to encompass the special services and drugs of today, to the major medical insurance and the comprehensive plans now available, which supplement the basic plan and cover many auxiliary services. The comprehensive plan provides liberal coverage (a deductible amount of \$25.00, three allowable deductions per year, and maximum annual benefits of \$10,000) at moderate cost. Its

merits are obviously recognized as evidenced by its growth from 234,000 subscribers in 1956 to an estimated coverage of 1.5 million Canadians in 1960. Mr. Naylor predicted that future growth would see these plans extended to more employed groups, and their benefits increased. They will include coverage of retired persons and the deductible portion will remain modest. He felt that the comprehensive plan will supplement government plans and cover most exigencies. He appealed to the profession to assist in the definition of benefits through assessment of reasonable fees, and observed that the success of these plans depends in essence on the doctor's co-operation and the avoidance of unreasonable charges.

Mr. G. F. Ferguson of the Canadian Health Insurance Association emphasized that many new features of benefits to the policyholder are now available. Policies which are guaranteed renewable regardless of physical status, and are non-cancellable except for non-payment, are becoming more common. People over 65 can now be insured and their pre-existing medical disabilities can be covered. Substandard underwriting is now a reality, by means of which people formerly uninsurable can be insured under a broader type of coverage. He re-emphasized the coverage obtainable under comprehensive medical insurance, which is designed to protect against the cost of serious illness or injury. Of interest to many was Mr. Ferguson's comment that at present the Association is endeavouring to devise a uniform claim blank, which would greatly simplify the handling of claims by the doctor. In concluding, he indicated that the Canadian Health Insurance Association was interested in preserving the voluntary way of doing business.

Mr. B. E. Freamo commented on the government's basic interest in the health and welfare of the people. The thought that if insurance is good for eight million, then it must be better for 17 million Canadians, has proved attractive because of the inadequacy of insurance plans until recently. These have failed to cover everyone, have provided less than adequate coverage and, to some extent, have been abused because of lack of adequate controls. However, Mr. Freamo felt that the profession could overcome these obstacles by encouraging and supporting voluntary insurance. He urged the profession to state its belief, namely, that the institution of government control will reduce standards and result in decadence in the practice of medicine, and to convince governments that the best interests of the public will be served by adherence to these beliefs.

A lively and lengthy discussion followed, with statements and questions from the floor. Comments were made on such subjects as the doctor's privilege to set fees, the interests of Labour in medicine and the differences between group and panel practice.

[Although difficulties were encountered in coverage of all portions of the Scientific Program, many of the papers read at the Annual Meeting will be published in extenso in the Canadian Medical Association Journal during the forthcoming months.—EDITOR.]

INCOMING EXECUTIVE COMMITTEE

The incoming Executive Committee of the C.M.A. met in the Angus Room of the Banff Springs Hotel on Thursday, June 16. The Committee is constituted as follows:

ASSOCIATION NOTES: 93RD ANNUAL MEETING 285

Executive Committee, 1960-61

President—Dr. R. MacGregor Parsons, Red Deer, Alta.
President-Elect—Dr. G. W. Halpenny, Montreal, P.Q.
Past President—H.R.H. The Prince Philip, Duke of Edinburgh
Deputy to the Past President—Dr. E. Kirk Lyon, Leamington, Ontario
Chairman of the General Council and the Executive Committee—Dr. M. S. Douglas, Windsor, Ontario
Honorary Treasurer—Dr. G. E. Wodehouse, Toronto, Ontario
General Secretary—Dr. A. D. Kelly, Toronto, Ontario
Deputy General Secretary—Dr. A. F. W. Peart, Toronto, Ontario
Assistant Secretaries—Mr. B. E. Freamo, Toronto, Ontario; Mr. K. C. Cross, Toronto, Ontario
Managing Editor—Dr. T. C. Routley, Toronto, Ontario
Editor—Dr. Donald C. Graham, Toronto, Ontario
Assistant Editor—Dr. G. T. Dickinson, Toronto, Ontario

Divisional Members

Dr. Peter O. Lehmann, Vancouver, British Columbia
Alternate, Dr. E. C. McCoy, Vancouver, British Columbia
Dr. A. A. Haig, Lethbridge, Alberta
Alternate, Dr. W. C. Campbell, Medicine Hat, Alberta
Dr. E. R. Stewardson, Moose Jaw, Saskatchewan
Alternate, Dr. H. D. Dalgleish, Saskatoon, Saskatchewan
Dr. R. W. Richardson, Winnipeg, Manitoba
Alternate, Dr. A. M. Goodwin, Winnipeg, Manitoba
Dr. W. W. Wigle, Dryden, Ontario
Dr. R. H. McCreary, Arnprior, Ontario
Dr. W. W. Baldwin, Brooklin, Ontario
Alternate, Dr. P. Bruce-Lockhart, Sudbury, Ontario
Dr. Renaud Lemieux, Quebec, Quebec
Dr. T. J. Quintin, Sherbrooke, Quebec
Alternate, Dr. Sylvio LeBlond, Chicoutimi, Quebec
Dr. H. Paul Melanson, Moncton, New Brunswick
Dr. R. O. Jones, Halifax, Nova Scotia
Alternate, Dr. F. J. Granville, Stellarton, Nova Scotia
Dr. J. A. McMillan, Charlottetown, Prince Edward Island
Alternate, Dr. L. E. Prowse, Charlottetown, Prince Edward Island
Dr. J. B. Roberts, St. John's, Newfoundland
Alternate, Dr. Donald Cant, Corner Brook, Newfoundland

After the roll call and introduction of new members, Dr. Murray Douglas was elected chairman of the Committee.

The following appointments were then made to Standing Committees, Special Committees, and as C.M.A. Representatives to outside organizations.

Standing Committees

Advisory Committee to the Federal Government

Dr. M. S. Douglas, Windsor (Chairman)
Dr. P. O. Lehmann, Vancouver
Dr. J. R. Lemieux, Quebec
Dr. G. E. Wodehouse, Toronto
Dr. R. G. Fraser, Montreal
Dr. L. R. Rabson, Winnipeg
Dr. J. A. McMillan, Charlottetown
Dr. R. M. Parsons, Red Deer
Dr. A. D. Kelly, Toronto

Committee on Archives

Dr. J. B. Ritchie, Regina

Committee on Awards, Scholarships and Lectures

Dr. R. M. Janes, Toronto

Committee on By-Laws

Dr. M. O. Klotz, Ottawa

Committee on Cancer

Dr. R. C. Harrison, Edmonton

Central Program Committee

Dr. R. C. Laird, Toronto

Committee on Economics

Dr. J. A. McMillan, Charlottetown

Committee on Ethics

Dr. Wallace Wilson, Vancouver

Committee on Hospital Service and Accreditation

Dr. N. N. Levinne, Toronto (Chairman)

Dr. J. R. Francis, Calgary

Dr. B. H. McNeel, Toronto

Dr. H. P. Melanson, Moncton

Committee on Income Tax

Dr. N. J. Blair, Vancouver

Dr. G. E. Chalmers, Fredericton

Dr. M. O. Klotz, Ottawa

Dr. K. R. Trueman, Winnipeg

Dr. T. J. Quintin, Sherbrooke

Dr. G. E. Wodehouse, Toronto

Dr. A. D. Kelly, Toronto (ex-officio)

Committee on Approval of Hospitals for the Training of Junior Interns

Dr. L. O. Bradley, Winnipeg (Chairman)

Dr. J. F. Anderson, Saskatoon

Dr. A. F. Anglin, Toronto

Dr. M. R. Dufresne, Montreal

Dr. D. S. Munroe, Vancouver

Dr. E. W. Nancekivell, Hamilton

Dr. L. C. Steeves, Halifax

Committee on Approval of Schools for Laboratory Technologists

Dr. D. F. Moore, Saskatoon (Chairman)

Dr. Carlton Auger, Quebec

Dr. W. J. Deadman, Toronto

Dr. J. Eden, Vancouver

Dr. I. A. MacLennan, Moncton

Dr. D. W. Penner, Winnipeg

Dr. D. Hugh Starkey, Montreal

Committee on Maternal Welfare

Dr. Thomas Primrose, Montreal

Committee on Medical Education

Dr. R. C. Dickson, Halifax

Committee on Nutrition

Dr. W. Harding leRiche, Toronto

Committee on Occupational Medicine

Dr. D. K. Grant, Toronto

Committee on Pharmacy

Dr. M. Nickerson, Winnipeg

Committee on Public Health

Dr. G. E. Duff Wilson, Kitchener

Committee on Public Relations

Dr. E. F. Crutchlow, Montreal

Committee on Approval of Schools for Radiological Technicians

Dr. J. G. Stapleton, Hamilton

Committee on Rehabilitation

Dr. Gustave Gingras, Montreal

Committee on the Medical Aspects of Traffic Accidents

Dr. Wallace Troup, Ottawa

Special Committees

Liaison Committee with l'Association des Médecins de Langue Française du Canada

Dr. G. W. Halpenny, Montreal

Dr. Sylvio LeBlond, Chicoutimi

Dr. J. H. M. Rice, Campbellton

Committee on C.M.A. Organization

Dr. P. O. Lehmann, Vancouver (Chairman)

Dr. Elmer Stewardson, Moose Jaw

Dr. James Roberts, St. John's

Editorial Board

Dr. D. C. Graham, Toronto (Chairman)

(with power to choose Editorial Board)

Finance Committee

Dr. G. E. Wodehouse, Toronto (Chairman)

(with power to select committee)

House Committee

Dr. T. C. Routley, Toronto (Chairman)

Mr. Charles M. Reside, Toronto

Dr. A. D. Kelly, Toronto

Dr. A. F. W. Peart, Toronto

Mr. B. E. Freamo, Toronto

Committee on International Relations

Dr. M. A. R. Young, Lamont (Chairman)

(with power to select his committee)

Committee on Relative Value Studies

Dr. R. M. Janes, Toronto (Chairman)

Dr. W. E. Armour, Toronto

Dr. R. S. Braiden, Toronto

Dr. D. E. Cannell, Toronto

Dr. J. Gollom, Toronto

Dr. D. J. MacKenzie, Toronto

Mr. B. E. Freamo, Toronto (ex-officio)

Staffing Committee

Dr. M. S. Douglas, Windsor (Chairman)

Dr. T. C. Routley, Toronto

Dr. W. W. Baldwin, Brooklyn

Trusteeship Committee (Nucleus)

Dr. G. E. Wodehouse, Toronto (Chairman)

Dr. E. W. Mitchell, Toronto

Dr. T. Tweed Samis, Toronto

Committee on Prepaid Medical Care

Dr. L. R. Rabson, Winnipeg (Chairman)

Dr. G. E. Wodehouse, Toronto

Dr. T. J. Quintin, Sherbrooke

Dr. Douglas McPherson, Lethbridge

Dr. R. M. Anderson, Oakville

C.M.A. Representatives on Outside Bodies

Association of Canadian Medical Colleges

Dr. R. C. Dickson, Halifax

Canadian Council on Hospital Accreditation

Dr. N. N. Levinne, Toronto

Dr. B. H. McNeel, Toronto

Dr. J. R. Francis, Calgary

Dr. Paul Melanson, Moncton

Liaison Committee with Canadian Pharmaceutical Association

Dr. M. Nickerson, Winnipeg

Dr. J. K. W. Ferguson

Dr. M. R. Dufresne, Montreal

Defence Medical and Dental Services Advisory Board
(likely to be superseded by Emergency Health Services Organization)

Dr. T. E. Holland, Winnipeg
Dr. H. S. Morton, Montreal
Dr. A. D. Kelly, Toronto
Dr. A. F. W. Peart, Toronto (alternate)

Canadian Conference on Health Care

Dr. J. A. McMillan, Charlottetown
Dr. A. D. Kelly, Toronto

Dominion Council on Nutrition

Dr. W. Harding LeRiche, Toronto

Health League of Canada

Dr. F. R. Griffin, Toronto

Associate Committee on Medical Research,
National Research Council

Dr. M. A. R. Young, Lamont

Canadian Commission on Nursing

Dr. H. T. Ewart, Hamilton
Dr. Paul Bourgeois, Montreal
Dr. M. A. R. Young, Lamont
Dr. A. F. W. Peart, Toronto (ex-officio)

Physicians' Art Salon

Dr. G. E. Tremble, Montreal (Chairman)
Dr. G. Harvey Agnew, Toronto
Dr. Arthur L. Murphy, Halifax

Canadian Society of Radiological Technicians

Dr. J. G. Stapleton, Hamilton

National Advisory Committee on Rehabilitation of
Disabled Persons

Dr. Gustave Gingras, Montreal

Drug Advisory Committee (Department of
National Health and Welfare)

Dr. M. Nickerson, Winnipeg
Dr. M. R. Dufresne, Montreal

Trans-Canada Medical Plans

Dr. R. W. Richardson, Winnipeg
Dr. J. A. McMillan, Charlottetown

Victorian Order of Nurses

Dr. J. H. B. Hilton, Ottawa

The following signing officers were appointed with authority to sign Association cheques: Dr. G. E. Wodehouse, Toronto; Dr. H. K. Detweiler, Toronto; Dr. R. A. Gordon, Toronto; Dr. T. Tweed Samis, Toronto. Limited to \$1500: Dr. A. D. Kelly, Toronto; Dr. A. F. W. Peart, Toronto; Mrs. M. E. Johnston, Toronto; Mr. C. M. Reside, Toronto.

Messrs. McDonald, Currie and Company were re-appointed Association auditors and the Royal Trust Company, Toronto, was re-appointed Financial Adviser.

The Role of the C.M.A. in the World Medical Association

After discussion of the C.M.A. attitudes towards Canada's role in the World Medical Association, with participation by Drs. N. H. Gosse and M. A. R. Young, our delegates to the forthcoming 14th General Assembly of W.M.A. in Berlin, the following instructions were enunciated for the delegates to transmit as representing C.M.A. opinion on the matters concerned. Regarding a suggestion that the scientific program component might well be dispensed with, since it was not suitable for presentation to the type of audience

attending W.M.A. meetings, the Committee voted that this should be a matter decided by the general feeling of those at the W.M.A. meeting.

Criticism of the quality of scientific articles in the *World Medical Journal*, and its precarious financial status, with a subscription rate of \$3.50 a year, led to the suggestion that the scientific component of the W.M.J. be discontinued. The delegates were instructed to use their own judgment in discussions which might arise concerning the *World Medical Journal* at the forthcoming Assembly.

With regard to the actual functions of W.M.A., it was considered generally desirable that the Association continue to act as a clearing-house for humanitarian functions to help less fortunate or underdeveloped nations, rather than confine its activities to the field of medical economics as had been suggested by the Royal Netherlands Medical Association.

It was suggested that while the C.M.A. was committed to its fiscal obligations to W.M.A. for the present year, the advisability of continuing this obligation might be subjected to re-evaluation in the future, since it was doubtful that the C.M.A. would wish to continue financial support of an inefficient organization, which W.M.A. appeared to be of late.

It was also suggested that Canada might consider a contribution to W.M.A. of service, in addition to money, in the form of an individual or a team to work in under-developed countries as a means of engendering interest of our members in the World Medical Association, as well as providing a much needed service. The C.M.A. delegates were then empowered by vote of the Executive Committee to present before the W.M.A. Assembly the suggestion that the C.M.A. would consider such provision of personnel for underdeveloped countries. It was agreed that since Canada is one of the "giving" countries we should seek to make that contribution which would be most worth-while.

It was recommended by the Executive Committee that our delegates to W.M.A. be provided with copies of the newly enunciated "C.M.A. Statement on Medical Services Insurance" passed at the recent meeting of the General Council.

It was further agreed that Dr. Gosse and Dr. Young should obtain a list of individuals in other countries who wish to receive copies of the *C. M. A. Journal*.

Drs. Gosse and Young were thanked for their interest and co-operation in attending the Executive Committee meeting and for taking part in its discussion, a synopsis of which is to be sent to them before the Berlin W.M.A. Assembly.

Business Referred from the Meeting of General Council

The Executive Committee:

1. Instructed the General Secretary to extend in writing an official vote of thanks to the Commissioners and their assistants in the R.C.M.P. in Ottawa for their approval and publication of the biographies of physicians attached to the North-West Mounted Police.

2. Instructed the General Secretary to notify the Medical Section of the Canadian Pharmaceutical Manufacturers' Association and the Canadian Thoracic Society of acceptance of their application for affiliation with the C.M.A.

3. Concurred in the Trusteeship Committee's recommendation that, in order to improve the retirement position of members of the profession, a companion

non-registered retirement fund be established supplementary to the Canadian Medical Retirement Savings Plan, to provide a means of investing savings over and above those entitled to tax deferral; such action giving the Trusteeship Committee authority to proceed with their plans for this fund, with consideration that any brochures circulated in this regard be printed in both English and French.

4. Instructed the General Secretary to negotiate completion of Insurance Claim Forms and to convey appreciation to the Canadian Health Insurance Association for their efforts towards finalizing these forms.

5. Voted that the Secretariat, in consultation with the solicitor, make any editorial changes in the C.M.A. Statement on Medical Services Insurance, which may be necessary, before its publication.

6. Agreed to circulate General Council's resolution of commendation to the medico-lay affiliates and concurred in Council's authorization to recommend to the Divisions that they approach the provincial organizations of the affiliates, on their own behalf and on behalf of their branch medical societies, offering assistance with a view to providing suitable medical representation and active participation at all levels of operation.

7. Voted to instruct the Committee on Prepaid Medical Care not to release any information concerning questions 22, 23 and 24 of the questionnaire on health insurance and agreed that the Executive Committee should release no information regarding replies to these questions before the next meeting of the Executive Committee and that the Divisions should be informed to this effect. These decisions were based on the numerous questions raised at General Council meeting regarding the validity of any statistics or conclusions arising out of the answers to questions 22, 23 and 24 as constituted in the questionnaire form.

8. Voted to send Division Executives the national figures arising from the questionnaire on health insurance up to question 21 and to offer to provide their own provincial figures if requested, understanding that future distribution of their provincial figures would be in their own hands, with the additional statement that these figures have not been thoroughly analyzed.

9. Agreed that free comment on the results of the first 21 questions of the questionnaire on health insurance be permitted with the understanding that this data has not been thoroughly analyzed.

10. Referred to the Special Committee on Prepaid Medical Care, General Council's resolution—"That the Council of the Ontario Medical Association recommends full and urgent support of the Committee on Prepaid Medical Care to study the health needs of the people as they relate to medical services presently provided by doctor-sponsored prepaid plans."

11. Referred to the Committee on Organization the following two resolutions of General Council concerning the organization of the annual C.M.A. Convention.

(a) That responsibility for the three aspects of the annual meeting be allocated thus:

- (i) Business—remain with the C.M.A.
- (ii) Scientific—be constituted by the regular scientific meetings of the affiliated societies.
- (iii) Social—remain with the C.M.A. with provision for one social gathering of an affiliated society if they so desire.

(b) That responsible bodies of the C.M.A. review our program for the annual meeting and consider al-

location of sufficient time for all parliamentary debate on essential business of this Association.

The Executive Committee further recommended to the Committee on Organization that provision be made for giving some relief to the Chairman of General Council in order that he may not be required to chair such long sessions of Council without any break.

12. Concurred the addition of the following paragraph to the report of the Committee on Traffic Accidents as a third paragraph to Section 1555 (1) of Reports to Council:

"When this critical economic situation of ambulance operators is overcome, it is recommended that then, ambulance drivers be required to have adequate instruction in first aid and in the proper transportation of unconscious patients and furthermore, that ambulance operators be required to adequately equip their ambulances."

13. With regard to a resolution passed by General Council pertaining to honoraria for the President and Executive Committee of the C.M.A., the executive Committee voted that Dr. E. Kirk Lyon be appointed as Chairman of a committee to consider financial aspects of the Presidency and of the Executive Committee and the question of recognition of meritorious service to the Association.

Dr. Kirk Lyon then named his committee to include Drs. W. Wigle and R. Lemieux, with the Honorary Treasurer a member ex-officio.

14. Re-affirmed the resolution of the outgoing Executive Committee recognizing the need for increased secretarial staff and approving initiation of an administration and management survey to reveal where such need lies. This resolution had been referred through General Council to the incoming Executive Committee. With its approval the Executive Committee accepted that the management consultant conducting the survey would examine all work done by the Association including that of its Department of Public Relations. It was considered that this would entail evaluation of, and proposals concerning action on, the recommendations contained in the Appendix to the report of the Committee on Public Relations which had been referred to the incoming Executive from the meeting of General Council. These recommendations proposed retaining a special public relations counsel in addition to the present Secretariat, establishment of a watching brief and permanent liaison with the Federal Government in Ottawa and engagement of a business management consultant with reference to the administrative structure of the C.M.A.

15. Voted to convey to the Canadian Council on Hospital Accreditation, through our representatives to that body, the sense of the following two resolutions from General Council: (a) "That this meeting of the Canadian Medical Association re-affirms its interest in the high purposes of the Canadian Council on Hospital Accreditation and expresses its willingness to assume further responsibility, financial and otherwise;" and (b) "That the C.M.A. representatives on the Canadian Council on Hospital Accreditation advise the C.C.H.A. that we would request that they invite the American College of Surgeons to continue to survey cancer clinics in Canada for a further period of three years."

16. Voted that a new standing committee of the C.M.A. be created, known as the Committee on Child Health, to promote, assist and co-ordinate divisional activity in this field, and that Dr. L. C. Grisdale be

requested to act as Chairman of this Committee, recommend its terms of reference and appoint a membership nucleus to be enlarged by representatives from Divisions if they so desire.

17. With regard to the B.C. Division's recommendation that the C.M.A. send a team of experienced observers to Australia to report on the Australian Health Insurance, the interrelationships involved between the people, the medical profession and government, and their effects on standards of practice and economics; a recommendation referred to this Committee after its defeat by vote of General Council, the Executive Committee voted that it should study all available material on the Australian Health Insurance Plan, and if the British Columbia Division sends a delegation to Australia for first-hand study, Mr. B. E. Freamo should accompany such delegation at C.M.A. expense.

18. Referred back to the Committee on Income Tax its report with General Council's recommendation that the committee should seek recognition of postgraduate refresher courses as deductible expenses from income tax.

Business Referred From the 1959 Executive Committee

On these items the incoming Executive Committee:

1. Agreed to place a notice in the *C. M. A. Journal* that the profession need have no further concern about the National Disease and Therapeutic Index which had decided to suspend operations of the Canadian Disease and Therapeutic Index due to internal administrative problems.

2. Re the 1961 Annual C.M.A. meeting in Montreal: The Executive Committee voted (a) that His Excellency, Governor-General Georges Vanier be elected an Honorary Member of the C.M.A. and be invited to attend the 1961 Annual Meeting; (b) that the General Council meet Monday, Tuesday and Wednesday, June 19, 20 and 21 with no evening sessions; and discussed with the President-elect, Dr. G. Halpenny, details concerning the social and scientific programs for the 1961 meeting, including the matter of French translation at one major session, of colour television programs, and the possibility of an American-Canadian panel broadcast from the United States. It was agreed that the local Committee on Arrangements should have authority to deal with these proposals and other details concerning the program.

In addition, the Executive Committee:

1. In executive session, appointed Dr. A. F. W. Peart as Deputy-General Secretary of the C.M.A. and authorized the Staffing Committee to discuss with the General Secretary any reallocation of duties and responsibilities consequent on this new appointment.

2. Directed that the minutes of the Executive Committee meetings be circulated to the alternate representatives of Divisions, and recommended that Divisions consider a proposal that their alternate representatives attend one meeting of the Executive Committee each year.

3. Voted that the next Executive Committee meeting be left to the call of the Chair and the Secretariat, probably in Toronto at C.M.A. House in October.

LETTERS TO THE EDITOR

FLUORIDATION (Continued)

To the Editor:

The perennial opponent of fluoridation, Dr. G. L. Waldbott, has reported one case of alleged "tetaniform convulsions precipitated by fluoridated water" (*Confin. neurol.*, 17: 339, 1957). The same author appeared recently in the correspondence columns of the *Canad. M. A. J.* (82: 940, 1960).

Examination of this paper reveals the following:

1. "Tetanic convulsions" are described wherein the patient, a 12-year-old boy, could both *hear* and *talk* during the seizure. How then can this be described as convulsion, in the usually accepted meaning of the term? The mild "convulsions" described are not inconsistent with habit spasm in a 12-year-old boy, subjected to family pressures.

2. There were no unusual findings from clinical and laboratory examinations.

3. There were no symptoms other than this occasional unilateral muscle spasm.

4. Consultants in paediatrics, dentistry, neurosurgery and neurology did not make any positive diagnosis.

5. "Because the diagnosis had not been clear", exploratory surgery of the cranium was carried out. Results were negative.

6. Over a holiday season, the patient had more "seizures" which subsided without apparent reason.

7. Alkaline phosphatase determinations were 21.1, 11.3, and 15.4 (King-Armstrong units). This is not

very high, as the normal for a child is 5-15 units per 100 c.c. according to Todd, Sanford and Stilwell ("Clinical Diagnosis by Laboratory Methods", 11th ed., W. B. Saunders Company, Philadelphia, 1948, p. 405).

8. In the face of normal levels of blood calcium, phosphorus, urea nitrogen, cholesterol and other laboratory data, Dr. Waldbott considers a moderate increase in alkaline phosphatase to be significant, and upon this establishes his diagnosis. However, in the same paper, he has said "No explanation can therefore be offered for the convulsions on the basis of our laboratory findings."

9. "Minor seizures" are reported at various times. If, in the original seizures, the patient could hear and talk, what are the criteria for a minor seizure?

10. Tetaniform seizures may be a feature of *acute* fluoride intoxication, but, we submit, almost always accompanied by other symptoms. In this case of alleged *chronic* fluoride intoxication, the only symptoms reported are mild, muscular, unilateral spasms lasting for a few seconds, and an occasional headache. Such a seizure was said to be produced after 0.1 c.c. of 1% fluoride was injected intradermally.

11. Why could not information be secured to explain the seizure December 31, 1956, when the patient was apparently not consuming fluoride water?

12. Etiology of an emotional nature, which might be recognized by a wise parent, has not been adequately considered by the author. In the blindfold test, he had the patient consume one tablespoonful of distilled water daily for 10 days, and one tablespoonful of water containing 1 mg. fluoride daily for 5 days. On the last

day, the patient exhibited a seizure and a headache. This blindfold test, we submit, was not double-blind, and therefore of doubtful value in this case. This child could surely be induced to twitch when confronted by a doctor, if the latter either deliberately or inadvertently suggested it to him.

Dr. Waldbott's conjectures fail to show evidence that trace quantities of fluoride in drinking water cause illness. Over 38 million people in North America drink water with fluoride content of 1 part per million or more. If Dr. Waldbott's theory is correct, it is indeed strange that so few cases have been reported.

J. H. LINDSAY, M.D., D.P.H. and
D. C. T. BULLEN, D.M.D.

1325 McQuarrie St.,
Trail, B.C.

MAJOR CONSIDERATIONS IN MINOR SURGERY

To the Editor:

I was very much interested in Dr. Fisher's article on varicose veins and his comments regarding surgical treatment (*Canad. M. A. J.*, 83: 35, 1960).

Although I have not handled any varicose vein patients recently, I have seen many who say they wished they had never had any "stripping", because of the protracted recovery and in many instances painful swollen legs. This I agree is entirely due to improper selection of suitable cases for this method of treatment, taking it for granted of course that the surgeon is familiar with the technique.

This is certainly a major operation. In my opinion many rectal operations, now regarded by many general surgeons as minor, should also be placed in the major class. Those of us engaged in proctologic work see many of these so-called minor cases which have been mishandled through faulty preoperative examination, and surgery, and have required further treatment. All of them should be studied endoscopically and then treated surgically. One should never forget that this is one of the body apertures most prone to self-treatment by widely advertised useless "cures". An extensive hæmorrhoidectomy or fistulectomy is certainly a major operation.

F. B. BOWMAN, M.D., F.R.C.P.[C.]
The Medical Arts Building,
Hamilton, Ontario.

HYPNOSIS IN GENERAL PRACTICE

To the Editor:

Dr. Gibson has written a timely article on hypnosis in general practice (*Canad. M. A. J.*, 82: 1281, 1960), pointing out that its usefulness is proven in a wide variety of conditions in everyday practice. He also rightly warns against considering it a panacea, and notes that it has, in common with any medical procedure, its limitations.

It should be made clear that the dangers of hypnosis are those that might result from misapplication of the technique, and not from the method itself. Hypnosis cannot of itself be harmful, any more than auscultation of the heart or prescription of vitamins can be harmful, but it can be used carelessly, ignorantly, or over-enthusiastically, as the author points out. Unfortunately, non-medical people are using it in these ways.

It is important for the medical profession to be aware of the value of hypnosis in the wide field of medicine, and to establish its proper role therein. Some of the reluctance of physicians in this matter may be due to exaggeration of dangers as well as to ignorance.

F. W. HANLEY, M.D.,
Psychiatrist,

97 Medical-Dental Building,
239 - 12th Avenue West,
Calgary, Alberta.

To the Editor:

Dr. Wm. M. Gibson (*Canad. M. A. J.*, 82: 1281, 1960) is to be commended for his interesting and stimulating report on his personal experience concerning the utilization of hypnosis in general practice. Particularly his concluding remarks about limitations and dangers appear wise and most useful. Considering the importance of his topic and the controversial issues involved, I would like to make some short comments starting where Dr. Gibson left off, namely with his example regarding a general practitioner, untrained in psychiatry, attempting to deal with a psychosis, which could have disastrous effects. The 116th Annual Meeting of the American Psychiatric Association, held in Atlantic City last May, stressed the importance of this topic by devoting to it a full session including the stimulating round-table conference manned by the leading authorities in the field. Although some of the speakers contended that relieving symptoms by hypnosis is a worth-while task, and that this form of therapy as well as teaching and learning hypnotherapy can be done without thorough knowledge of psychiatry, a different viewpoint seemed to be overwhelmingly accepted, postulating that hypnotherapy should not be performed without training in basic psychodynamics. There were reports of harmful effects on patients undergoing hypnotherapy, but Dr. Harold Rosen reported on increasing numbers of doctors and dentists who have been adversely affected through administering hypnosis to their patients.

A report of the highlights of the papers and discussions will be found in "Documenta Geigy", which is in the process of being distributed to the medical profession.

MILO TYNDEL, M.D., Ph.D.,
Neuropsychiatrist,
459 Bloor Street West,
Toronto 4, Ontario.

THE LONDON LETTER

(From our own correspondent)

A NEUROLOGICAL CENTENARY

With due pomp and circumstance, including a visit by the Duke of Edinburgh, the National Hospital for Nervous Diseases, in Queen Square, has been celebrating its centenary. The fact that representatives from 37 countries have attended the celebrations is some indication of the international reputation of this home of British neurology. From its humble beginnings, with accommodation for ten in-patients, it has developed into a hospital which attracts neurologists from all quarters of the globe. In its time it has had on its staff those "giants" of neurology who have

been responsible for the proud boast that the British school of neurology is second to none. Hughlings Jackson, Gowers, Ferrier and Horsley—all were members of the staff of "Queen Square", not to mention the present doyen of British neurology—Sir Gordon Holmes. Almost from its beginning the Hospital has been famed for its teaching, and it was this, as well as the high standard of clinical practice, that attracted postgraduates to it from home and abroad. In the post-war reorganization of the University of London, it has become a federated institute of the British Postgraduate Medical Federation of the University of London, under the title of the Institute of Neurology. Unless the omens are particularly misleading, all now seems well set for the Hospital's embarking on a second century as notable as that it has just completed.

PROFESSOR ALEXANDER KENNEDY

The sudden death, at the age of 51, of Professor Alexander Kennedy, professor of psychological medicine in the University of Edinburgh, has deprived British psychiatry of one of its most outstanding exponents. What is even more important, it has deprived us of the psychiatrist who was doing more than anyone else to bring psychiatry back into the stream of general medicine. One of his colleagues has described him as having "one of the best brains in psychiatry". As this was combined with what can only be described as a brilliant gift for lecturing and the facility for being able to translate the mysteries of psychiatry into terms that the ordinary doctor could understand, it is not difficult to explain why in his all too short career he has had such a beneficial effect upon clinical psychiatry. No mention of him would be complete without at least a passing reference to his talents as a gifted broadcaster, a writer of many successful radio plays, and his many other interests: he was, for instance, a past-president of the International Commission on Boxing. He was a fascinating character who was almost a legend in his life-time, and innumerable are the stories of his many exploits in the most unexpected spheres. Typical of the many stories told of him is that in his student days at St. Thomas's Hospital, London, he was never charged a fare on the London trams as the conductor assumed he was a policeman in plain clothes!

THE WOOLWICH ACCIDENT BED

Details have just been released of a new type of bed which promises to be of the greatest value in the management of severe casualties. Known as the Woolwich Accident Bed, it has been designed by Miss Phyllis Farmer, the Casualty Sister at Woolwich Memorial Hospital. Its great merit is that it cuts out all unnecessary moving of the shocked accident case, and is so constructed that the patient can remain in it during his entire stay in hospital—if necessary. Indeed, it is so adaptable that, if the patient has to be taken by ambulance to another hospital for specialized treatment, he can be moved lying in the bed.

The bed consists of a metal framework, and has a fibre-glass base instead of the usual wire mesh mattress. Because of its firmness, this fibre-glass mattress acts as a fracture board. In addition, like the plastic foam mattress on which the patient actually lies, it allows x-rays to pass through it. Under the bed is a metal

movable tray holding an x-ray cassette, so that the patient can be x-rayed without being moved from the bed. Other features of the bed are that the head and foot can be moved easily, which makes nursing easier, and the bed can be tilted so that the patient can be nursed in whatever position is best for him. There are also fittings so that a blood-transfusion stand can be fixed at any of the four corners of the bed.

NEW SCHOOL FOR SPASTICS

What is described as "the first school in the world to be specially built and equipped for the education of spastic children who are also deaf" has just been opened by Sir Alexander Ewing, professor of education of the deaf, in the University of Manchester. Through small special receivers worn on the clothing, the pupils, whether partially or severely deaf, will be able to hear instructions spoken into the teacher's microphone and re-radiated through an under-floor wire loop encircling each classroom. This technique will make it possible for any number of children, whether at their desks or moving about, to receive instruction without wires to impede their movements.

WILLIAM A. R. THOMSON

London, July 1960

OBITUARIES

DR. JOHN FARQUHAR FULTON:

AN APPRECIATION

Professor John Farquhar Fulton, Sterling Professor of the History of Medicine and formerly Sterling Professor of Physiology at Yale University, died at his home in New Haven, Connecticut, on May 29, at the age of 60. Son of a doctor and a native of Minnesota, he obtained his B.S. at Harvard in 1921 and then went to Magdalen College, Oxford, as a Rhodes scholar, where he was awarded the D.Phil. in 1925. At Oxford he studied under Sherrington, and through the friendship of Lady Osler he became familiar with Osler's library. He returned to Harvard and obtained his M.D. in 1927. After working in neurosurgery with Harvey Cushing, he returned to Oxford in 1928 upon his election to a fellowship at Magdalen College and continued his work with Sherrington. In 1930, he was appointed Sterling Professor of Physiology at Yale and in 1951, having created a department of international fame, particularly for its contributions to neurophysiology, he became Sterling Professor of the History of Medicine at the same university.

Dr. Fulton was perhaps best known to medical students and practitioners for his "Textbook of Physiology" and his "Physiology of the Nervous System", but he made many other major contributions to the literature of physiology, including his monographs on "Muscular Contraction and the Reflex Control of Movement" (1926) and "The Sign of Babinski: A study of the evolution of cortical dominance in primates" (1932). His work with C. F. Jacobsen on the effects of removal of the frontal lobes in primates (1937) was one of the most important experimental contributions to the development of the therapeutic use of leukotomy in man.

During the Second World War he and his colleagues concentrated on aviation physiology, and Dr. Fulton had much to do with the establishment of the excellent liaison in this field between the United States, Britain and Canada. In recognition of these services he was awarded the O.B.E.

To many, Dr. Fulton was known for his contributions to medical and scientific history and bibliography. His "Selected Readings in the History of Physiology" is a valuable collection of the original descriptions of many of the important discoveries in physiology. Perhaps more widely read is his biography of Harvey Cushing. In scientific bibliography his "Bibliography of the Honourable Robert Boyle" was his outstanding work. The high repute of the *Journal of Neurophysiology* and of the *Journal of the History of Medicine and Allied Sciences* testifies to his creative ability as an editor.

For those who were students or colleagues of Fulton, his great quality was his ability to inspire and encourage. His enthusiastic interest in, and kindness to, his younger colleagues, even to the most junior student, created a happy and productive group, members of which are now leaders in physiology, neurology and neurosurgery in many countries.

His many outstanding scientific writings and achievements were those of a mind highly trained in observation and deeply enriched by the wide interests of medical history and literature. As a Curator of the Osler Library he not only drew on its unique wealth but he was a constant and most generous friend to it; it was one of his many pleasant links with Canada.

He has left to the world of medicine a fine legacy of scientific accomplishments, and a memory, yet more fine, of unfailing modesty and self-effacement.

JAMES A. F. STEVENSON

DR. JULES PHILIP GUSSIN, 58, who practised in St. Boniface, Man., died on June 24. He graduated in medicine in 1926 and was licensed to practise in British Columbia and Saskatchewan.

His widow and two daughters survive him.

DR. THOMAS P. KEARNS, aged 59, died June 28 at St. Joseph's hospital, London. Born in Wardsville, Ont., he graduated from the University of Western Ontario in 1932 and practised in Bothwell and later in Byron for 11 years.

Surviving are his second wife, a son and two daughters.

DR. NICHOLAS A. OST, aged 49, died July 2 at his home in Winnipeg.

Dr. Ost graduated from the University of Manitoba in 1935. He was a past president of the McKellar Hospital Medical Staff.

Surviving are his widow, his mother and three sisters.

DR. IRVIN E. WEISSTUB died in Winnipeg on June 13. Born in Russia, he took postgraduate work in Vienna. From 1932 to 1955 he practised in Port Arthur, Ont., and then moved to Winnipeg, where he lived in semi-retirement, writing scientific articles for the *Canadian Medical Association Journal* and short humorous stories in Hebrew and Yiddish.

He is survived by his widow and two sons.

PROVINCIAL NEWS

ONTARIO

Dr. Alan W. Conn has been appointed anaesthetist-in-chief at the Hospital for Sick Children, Toronto, effective July 1, succeeding Dr. Ivan C. Junkin. Dr. Conn graduated in medicine from the University of Toronto in 1948, is a Fellow of the Royal College of Physicians of Canada, and holds the degree of B.Sc. After his internship at the Toronto Western Hospital he spent two years of study in Britain on a McLaughlin Travelling Fellowship. In addition to his appointment to the Hospital for Sick Children he was on the anaesthesia staff of the Toronto Hospital, Weston, and is a clinical teacher in the Faculty of Medicine, University of Toronto.

Dr. Junkin has resigned as anaesthetist-in-chief, but will remain on the hospital staff, where he has specialized in paediatric anaesthesia for over 33 years, during which time it is estimated that he has administered more than 65,000 anaesthetics. Since 1927 he has held the position of anaesthetist-in-chief at the Hospital for Sick Children, where he is the senior member of the medical staff in length of service. He has been chairman of his hospital's Medical Advisory Board, is an associate in the department of anaesthesiology of the University of Toronto, and consultant in paediatric anaesthesia to the Toronto General Hospital and to the Princess Margaret Hospital.

D.C.G.

The faculty members of the new Nightingale School of Nursing, sponsored by the Ontario Hospital Services Commission, with its own board of trustees, made up of representatives of the O.H.S.C., hospitals, general education, and the community at large, are busy planning the curriculum for a new program of nursing education.

The pilot project, conducted by the Canadian Nurses Association, financed by the Red Cross and directed by Professor Nettie Fidler, head of the University of Toronto School of Nursing, proved conclusively that a student could be prepared in two years, provided the school had full control of her time, both in the classroom and in her clinical experience.

Until its school and residence are built, the Nightingale School will operate at the former residence for nurses of the Hospital for Sick Children.

Uniforms, room, board, books and library facilities will be provided by the school. The student will pay a tuition fee of \$75 a year. Educational requirement for entrance is Grade 13 or its equivalent and minimum age is 17 years.

The dominant emphasis in the curriculum will be on the concept of health and its preservation, as well as on restoration and rehabilitation of the patient to an optimum state of health after an illness.

The director is Mrs. M. Blanche Duncanson.

The effects of atomic radiation was the subject of a recent panel discussion sponsored by the suburban study group of the National Council of Jewish Women of Canada. The moderator was Rev. James Cunningham, chaplain, Hart House. Panellists were Dr. Gordon Clark, department of zoology, University of Toronto, who teaches radiation biology; Mr. David P. Gauthier, department of philosophy, chairman, nuclear disarmament.

ment committee, University of Toronto; Dr. Kenneth McNeil, department of physics, University of Toronto, and Dr. Donald Baker, director of the Radiation Research Unit, Best Institute.

At the quarterly staff meeting of the Hôtel-Dieu Hospital, Windsor, a film called "Radiation, Physician and Patient" was shown.

The neurosurgical unit of the I.O.D.E. Memorial Hospital, Windsor, was opened in May. The guest speakers were Dr. John Meyers, professor of neurology and chairman, department of neurology, Wayne State University College of Medicine, Detroit; Professor E. S. Gudgean, professor of neurosurgery and chairman, department of neurosurgery of the same university; and Dr. Wilder Penfield, Montreal, who has taught the staff members of the Windsor Neurosurgical Unit, Dr. Victor Kleider and Dr. Armando Ortiz.

LILLIAN A. CHASE

QUEBEC

Le 27 mai dernier, avait lieu à l'hôpital Laflèche de Grand'Mère, l'ouverture officielle du comptoir à cadeaux. La cérémonie d'inauguration fut marquée d'un éclat spécial par la présence de la présidente de l'Association provinciale des auxiliaires d'hôpital, Mme J. Beaudoin-Handfield, et la vice-présidente Mme Bloomfield, toutes deux de Montréal. Plusieurs invitées de l'extérieur avaient tenu à venir rendre hommage à leurs consoeurs, notamment une délégation d'Auxiliaires de l'hôpital Ste-Thérèse, de Shawinigan, sous la conduite de la présidente Mme Ls.-P. Lacoursière, et composée de Mmes Armand Désilets, Henri Fauteux, Jules Trudel, Rosaire Bourque, Henri Désaulniers et Emile Deschênes, ainsi qu'une autre de l'hôpital Cloutier du Cap-de-la-Madeleine, avec Mmes Maurice Lanouette, présidente, Jacques Cayer, Claude Landry et Bernard Gagnon. Parmi l'assistance l'on retrouvait également les docteurs Lasalle Mondor, R. Dessureault et R. Vermette. Le docteur Louis-A. Frenette, président du Bureau médical, étant absent, le docteur André Poisson avait accepté de la représenter.

Par cette initiative les Auxiliaires de Laflèche battent la marche, car grâce à elles, leur hôpital, sauf erreur, devient le premier en Mauricie à être doté d'un comptoir à cadeaux. Il s'agit d'une boutique miniature, garnie de tablettes de verre regorgeant de jolies choses—ce qui n'élimine pas le pratique—la plupart offertes et même fabriquées par des bienfaitrices. La secrétaire, Mme Jean Lamarre, en est la directrice; elle est secondée en son travail par Mme Ernest Lacroix qui s'occupe de la récupération des cadeaux. Il faut dire que plusieurs dames ont collaboré à ce projet, à commencer par la présidente Mme Robert, et les autres membres de l'exécutif: Mmes Roland Royer, vice-présidente; Raymond Lamothe, trésorière; Madeleine Lahaie, responsable de la bibliothèque; Arthur Laberge et Bruno Richard, du comité de la couture; Frank Gauthier, des pansements, et Lasalle Mondor, pour les visites aux malades. La Mère supérieure de M. l'aumônier ont aussi donné leur précieux appui.

Les Auxiliaires de l'hôpital Laflèche sont au nombre de 236. L'Association provinciale compte 23,000 membres, à raison de 46 associations affiliées dont 21 de langue française. Il y a dans le Canada entier, un total de 93,000 Auxiliaires d'hôpital.

BOOK REVIEWS

THE INTESTINAL TRACT. Structure, Function and Pathology in Terms of the Basic Sciences. Richard Paul Spencer. 411 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$12.75.

This book is divided into three sections. The first short section discusses the development of the intestinal tract and briefly outlines the laboratory techniques for its study. The second section describes normal intestinal function. Basic data regarding innervation, peristalsis and defaecation, composition and metabolism of intestinal cells, digestion, absorption, electrolyte secretion, intestinal bacteria, gastro-intestinal hormones and enzymes are discussed in detail. The author has gathered and integrated material from hundreds of publications and has presented these subjects in a clear and concise manner.

The third section contains a discussion of some aspects of diseases affecting the intestine and of disordered intestinal function. Some chapters in this section including one on potassium metabolism are good. The discussion on "Some effects of diet and psyche" is too cursory. The chapters on ulcerative colitis, regional enteritis, miscellaneous disorders and some others in this section deal only with isolated features and add little or nothing to the information found in standard textbooks. Although the title indicates that the reader will find a description of "structure, function and pathology in terms of the basic sciences", the descriptions of pathology are inadequate.

This publication will be of considerable value to the gastro-intestinal research worker and as a reference text to the gastroenterologist. It will have little or no appeal to the practitioner or medical student.

NEW METHODS OF STUDYING GASEOUS EXCHANGE AND PULMONARY FUNCTION. A. Fleisch. 116 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$6.25.

This book provides a useful summary of the work which has been published by Dr. Fleisch over a period of many years. The techniques he uses are described in detail and the reader is left with a clear idea of the work which has come out of the author's department at Lausanne in Switzerland.

Unfortunately, the reader will not be introduced to modern methods of assessing pulmonary function, since no attention is given to methods of measuring pulmonary blood flow, pulmonary diffusing capacity, or the mechanics of respiration. The measurements which can be made by the apparatus perfected by Dr. Fleisch have undoubtedly some value in the measurement of pulmonary function. Nevertheless it cannot be denied that the more advanced techniques of study which are not covered by the contents of this book give a much more precise idea of any defect in pulmonary function that may be present.

For this reason one cannot recommend this book for the general reader, as the techniques described have only a limited usefulness in the measurement of pulmonary function. The book remains an interesting historical summary of the techniques and methods which have been used but contributes little to new knowledge.

MYOCARDOSIS. Pathogenesis, Clinical Aspects and Therapy with Recent Investigations Concerning the Principles of Metabolic Electrocardiography. Professor Ferdinand Wuhrmann, with the collaboration of Serge Niggli; translated by Harvey T. Adelson. 218 pp. Illust. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1960. \$10.50

Myocardosis is a disturbance of myocardial function, an initially reversible disease marked by fatigue, weakness, dyspnoea, bradycardia or tachycardia and electrocardiographic changes, associated with alterations in the serum proteins. It is distinct from inflammatory myocarditis, the well-known cardiopathies, ischaemia and the common forms of heart disease. Most cases accompany the dysproteinæmias of such diseases as cirrhosis, ulcerative colitis, nephrosis, or the electrolyte disturbances of diabetes and endocrine malfunctioning, but a few are cardiogenic, following, for example, extensive myocardial infarction or prolonged liver congestion.

It is a diagnosis not found in the common texts of cardiology in England and America though it is included in some of the European texts of internal medicine. Professor Wuhrmann's book, translated into clear and readable English, is a persuasive exposition from the introductory chapter in which he outlines the concept to the penultimate one dealing with the therapeutic considerations of myocardosis. (The final chapter is a Summary and Conclusion, just as useful at the end of a book of over 200 pages as it is at the end of an article in a journal.) In between are sections on the metabolism of the myocardium, symptomatology, the electrocardiogram, the forms of myocardosis related to specific diseases, prognosis and morphological changes. A useful feature is the large section devoted to the electrocardiographic patterns of various electrolyte abnormalities with analysis of many tracings.

This is a detailed and well-ordered book with information useful for the internist or cardiologist who has to read the cardiograms or look after the patients on metabolic and endocrine services and it may broaden his understanding of heart disease.

THE ORIGIN OF LIFE ON THE EARTH. Proceedings of the First International Symposium. Edited by A. I. Oparin (Moscow) and others. 691 pp. Illust. Pergamon Press, New York, London and Los Angeles, 1959. \$15.00.

This large and, in the main, highly technical book is a full report of a symposium sponsored by the International Union of Biochemistry and held in August 1957 in Moscow — appropriately, since Academician Oparin has devoted most of his career to this fascinating if elusive subject. In this edition there are a few papers in German or French, but the great majority were either presented in English or have been well translated into it. More than 40 scientists, representing 16 countries, took part: there was one Canadian speaker, Dr. Cyril Reid of the University of British Columbia.

On such a subject, every contributor has to begin by making certain assumptions as to the nature of the surface of the earth, and of its atmosphere, at the time when life first appeared. From this point on, his argument may be logical enough, but the original assumptions are subject to challenge. Hence many divergent views are expressed, and it is refreshing to see that the Soviet scientists differ among themselves, sometimes with considerable acerbity. In summary, then, this long

discussion (seven sessions) is anything but definitive; but many stimulating ideas are put forward and the arguments adduced to support them are often both ingenious and interesting. This is by no means a work of science fiction, and it is surprising to see how much experimental evidence, gained in recent years, can be found relevant in considering an event which occurred, perhaps, some two billion years ago.

RADIO-DIAGNOSTIC EN RHUMATOLOGIE (Radio-logical Diagnosis in Rheumatology). M. S. de Sèze, Directeur du Centre de Rhumatologie Viggo-Peterson, Hôpital Lariboisière, Paris, M. Albert Djian et Mme Micheline Phankim-Chapuis. 188 pp. Illustré. L'Expansion Scientifique Française, Paris-VIe, 1959. \$5.85 approx.

Le professeur de Sèze, en collaboration avec monsieur Albert Djian et madame Phankim-Chapuis, a récemment publié aux éditions de l'Expansion Scientifique Française de Paris un petit recueil de clichés radiologiques typiques des principales affections rhumatismales. Cet album fort bien présenté groupe, en 188 pages, plus de 400 images radiologiques de base provenant de l'iconographie du Centre de Rhumatologie Viggo-Petersen de l'hôpital Lariboisière à Paris. Dans la préface de ce que les auteurs appellent un abécédaire, on explique que seules des images classiques ont été reproduites; elles correspondent aux clichés radiologiques le plus souvent observés en pratique rhumatologique courante. Ces reproductions sont accompagnées de notes explicatives judicieusement rédigées. Pour les lecteurs nord-américains l'étude des clichés inversés, tel qu'utilisée dans cet ouvrage, est quelque peu déroutante. La pratique européenne courante de reproduire le positif des radiographies originales n'a plus sa raison d'être puisque les progrès de la technique permettent maintenant la parfaite reproduction de clichés originaux sans qu'il soit nécessaire d'inverser les images. L'impression soignée du texte aussi bien que des clichés ajoutent au plaisir de lire cet ouvrage. Quant au texte, la nomenclature utilisée, est remarquable de précision. C'est ainsi que les auteurs écrivent nécrose ischémique et non pas nécrose aseptique, arthrose de dégénérescence plutôt qu'ostéoarthritis, ostéosarcome au lieu de sarcome ostéogénique, ostéose parathyroïdienne et non ostéite kystique. Le texte est succinct, vivant de complète admirablement les clichés reproduits. On nous prévient dès les premières pages que cet ouvrage ne s'adresse pas aux rhumatologues mais à ceux qui débutent dans la spécialité, aux étudiants et surtout aux omnipraticiens qui, devant connaître l'essentiel de toutes les maladies, ne sont pas particulièrement familiarisés avec les maladies osseuses et articulaires. Les auteurs, dans la préface, reconnaissent avec gratitude la collaboration de maisons de produits pharmaceutiques à la réalisation de leur album. Cette collaboration nous est peut-être rappelée avec trop d'insistance puisque chaque seconde page du texte comporte une réclame commerciale occupant plus du quart de la page. En somme, malgré certaines réserves, "Radio-diagnostic en rhumatologie" atteint pleinement et d'une façon très élégante l'objectif que s'étaient fixé ses auteurs. Il est souhaitable que le professeur de Sèze et ses collaborateurs donnent suite à leur projet de publier prochainement d'autres abécédaires concernant les maladies rhumatismales.

(Continued on page 296)

Effective, safe tranquillizer

mellaril®

THIORIDAZINE

cuts out
side-effects

for
mental disorders
seen in
• general practice
• psychiatry
• paediatrics



advantages of **mellaril®** over other phenothiazines

- ▲ more specific action on C.N.S.
- ▲ virtually free of all side-effects
- ▲ as effective as the best available
- ▲ no initial "keyed-up" feeling
- ▲ no depressive effect, no masking anti-emetic effect

dosage guide

psycho-neurotics in office practice
non-hospitalized psychotics
hospitalized psychotics
behaviour problems in children

usual

10 mg. t.i.d.
25 mg. b.i.d.
25 mg. t.i.d.
100 mg. t.i.d.
10 mg. b.i.d.

range

(30-50 mg.)
(75-200 mg.)
(200-800 mg.)
(20-40 mg.)

SANDOZ PHARMACEUTICALS, DORVAL, P.Q.

7982



(Continued from page 294)

BRUCELLA INFECTION AND UNDULANT FEVER IN MAN. Sir Weldon Dalrymple-Champneys, 196 pp. Illust. Oxford University Press, London, New York and Toronto, 1960. \$3.75.

This is the most comprehensive study and the best written treatise in a small medical book that this reviewer has ever experienced. It is well chaptered and indexed, with 385 references, packed with information on all aspects of the disease, and backed by a wealth of experience. More detail is not necessary. This book should be read by all physicians, general practitioners, public health officers and medical students. Informative and authoritative, it is a joy to read and will prove a valuable addition to one's library.

L'ANEVRISME DE L'ARTERE COMMUNICANTE ANTERIEURE. (Aneurysm of the Communicating Anterior Artery.) Report presented at the first European Congress of Neuro-surgeons, Zürich, July 16-19, 1959. H. Kräyenbühl and others. 190 pp. Illust. Masson & Cie., Paris, France, 1959. \$6.80 approx.

Le problème de l'hémorragie sous-arachnoidienne causée par la rupture d'anévrisme de l'hexagone de Willis a pris une ampleur considérable depuis quelques années. Ceci est sans doute en relation avec le diagnostic de plus précis et précoce de ces lésions, de leur fréquence et de leur gravité ainsi que des techniques anesthésiques et chirurgicales modernes.

L'anévrisme du carrefour "communicante antérieure-cérébrale antérieure" est un des plus fréquents selon l'expérience des différents centres mais également l'un des plus dangereux à cause de la région hypothalamique antérieure avoisinante. C'est la raison pour laquelle cette lésion a fait le sujet d'une étude spéciale au premier Congrès européen des neurochirurgiens, qui est rapporté dans cette monographie.

Ce rapport constitue une étude sérieuse et approfondie de la question sous ses différents angles, anatomie, pathologie, radiologie, clinique, pronostic et traitement. L'ensemble de cette monographie constitue en général une excellente étude de la question par des auteurs qui en ont fait une étude particulière.

Le chapitre de Guy Lazorthes sur l'Anatomie et la Physiologie de la circulation à ce carrefour, démontre bien l'importance d'une connaissance approfondie de la région, nécessaire pour comprendre et traiter ces lésions. Trois neurochirurgiens bien connus rapportent leur expérience personnelle sur le traitement de cette lésion: Kräyenbühl (90 cas), Longue (84), et Laine (34).

Tous sont d'accord sur le traitement chirurgical de cette lésion en raison de sa gravité plus grande lorsque laissée à elle-même. Logue insiste dans ses statistiques sur deux points importants quant à l'interprétation des résultats: d'abord la période de temps écoulée entre l'hémorragie et l'acte chirurgical et ensuite l'état neurologique au moment de l'intervention. Ces deux points sont importants à considérer dans une étude semblable pour apprécier la valeur des différents procédés. Logue décrit une intervention nouvelle qu'il pratique dans ces cas, la ligature proximale de l'artère cérébrale antérieure du côté où l'anévrisme s'injecte exclusivement ou en grande partie. Il aurait été peut-être préférable de décrire plus longuement cette indication, radiographies à l'appui (qui ne sont pas reproduites) pour déterminer l'avantage de cette technique. En effet, nous avons souvent observé un anévrisme de la communicante antérieure s'injectant d'un seul côté, alors que la cérébrale antérieure du côté opposé semblait

en spasme, à cause du rétrécissement noté à l'artériographie.

Toutes les différentes techniques sont décrites dans cette monographie mais il est une, l'enrobage, qui n'est mentionnée que brièvement et dont Dutton en a déjà fait une étude particulière.

La monographie est en général une excellente étude mais nous devons mentionner un fait particulier, qui n'est pas souligné d'une façon démonstrative. En effet, les statistiques en général mentionnent le pronostic des anévrismes rupturés traités médicalement comparé au pronostic de ceux qui sont opérés, mais ces pronostics comparés tiennent rarement compte de l'état neurologique préexistant et le fait que les cas opérés sont habituellement sélectionnés. C'est ce qui fait la valeur des cas rapportés par Logue qui le mentionnent bien.

Dans le dernier chapitre Laine décrit bien les différentes variétés des anévrismes de ce carrefour d'après leur projection dans l'espace. La bibliographie est assez complète.

Cette monographie sera sans doute indispensable à tous les neurochirurgiens et neurologues, et très utile aux neuroradiologistes et neuropathologistes.

LE TRAITEMENT PAR LA VITAMINE "A" DE L'AVORTEMENT A REPETITION. Maladie endocrinienne pro-abortive récidivante des Smith. O. Roujansky. 81 pp. L'Expansion Scientifique Française, Paris, France, 1959. \$1.46 approx.

L'auteur énonce une nouvelle thérapeutique de ce type d'avortement bien spécifique qui est essentiellement endocrinienne.

Prenant le schéma des Smith, l'auteur étudie plus particulièrement le chaînon laissé dans l'ombre par les Smith, c'est-à-dire, comment la folliculine, qui n'a pas d'action sur la sécrétion de LH, est-elle transformée en produits oxydés qui stimulent la sécrétion de progestérone. Le problème du traitement sera avant tout celui de la restauration de la fonction œstrogénolytique du foie. Après une analyse élaborée du déséquilibre endocrinien basée sur une insuffisance de détoxication hormonale au niveau du foie, l'auteur en conclut que cette maladie pro-abortive est caractérisée par une mauvaise détoxication hépatique des œstrogènes, qui normalement s'effectue grâce à un système enzymatique dont la vitamine A fait partie. Une carence en vitamine A empêche donc cette détoxication.

Cette thérapeutique strictement basée sur les théories déjà publiées par l'auteur du "Cycle végétatif en physiologie humaine" est confirmée par l'analyse détaillée de huit grossesses d'une patiente dont les six premières se terminent par l'avortement, malgré toutes les récentes thérapeutiques employées. Par contre, durant les deux dernières grossesses, l'emploi de la vitamine A à haute dose durant au moins six mois, a permis de rendre ces grossesses absolument normales. Les doses recommandées dès le début du syndrome sont de 1.000.000 unités le premier jour, 500.000 unités pour deux jours, suivies de 100.000 unités par jour.

Cet ouvrage présente certainement un intérêt médical de valeur, car le problème du traitement actuel de cette maladie est loin d'être résolu et il nous permet de nous diriger maintenant vers une nouvelle voie. De plus, le nouveau traitement, d'ailleurs peu dangereux, vaut certainement d'être étudié davantage et surtout, ce que l'auteur n'a pas fait, devrait être expérimenté cliniquement dans un plus grand nombre de cas.

(Continued on advertisement page 21)

(Continued from page 296)

DIE GASODEME DES MENSCHEN. Allgemeine bakteriologische und pathologisch-anatomische Grundlagen. Band 2: Pathologie, pathologische Anatomie und Histologie, Pathogenese, Diagnose und Therapie, Literatur. (Gas Gangrene in Man: The General Bacteriological and Pathological Basis; Vol. I: Pathology, Anatomy and Histology, Pathogenesis, Diagnosis and Therapy, Literature.) J. Zeissler, C. Krauspe and L. Rassfeld-Sternberg. 373 pp. Illust. Dr. Dietrich Steinkoff Verlag, Darmstadt, Germany, 1960.

In 1958 the authors published two volumes on "gas gangrene" or as they term it much more sensibly "gascœdema". One volume consisted of illustrations and the other concerned the history, comparative pathology and bacteriology. The authors apologized for the scarcity of data on their own cases, attributing this to destruction of their material in Königsberg in 1945 "aus fremden Hand".

They have now published a third volume dealing in detail with the pathology and bacteriology of the various forms of "gascœdema". This volume includes a list of approximately 4500 references on the subject, the great majority being culled from the German literature. Departments of pathology and bacteriology will welcome these volumes for their full treatment of the problems involved. Clinical management of cases of gas gangrene is dealt with very briefly.

MEDICAL OFFICER of HEALTH

To co-ordinate the Public Health Services for the City of London, Ontario.

Must possess a diploma in Public Health and at least three years' training and experience in Public Health administration. Full civic benefits. Salary dependent on experience and qualifications.

Address all correspondence to:

Mr. W. J. Anthony,
Personnel Director,
City of London.

COOK COUNTY GRADUATE SCHOOL OF MEDICINE

INTENSIVE POSTGRADUATE COURSES
STARTING DATES—FALL, 1960

Surgical Technic, Two Weeks, September 26, November 7
Gallbladder Surgery, Three Days, October 17
Surgery of Hernia, Three Days, October 20
Surgery of Colon and Rectum, One Week, September 19
Fractures and Traumatic Surgery, Two Weeks, October 24
Obstetrics, General and Surgical, Two Weeks, October 3
Gynecology, Office and Operative, Two Weeks, September 12
Pediatrics, Two Weeks, October 3
Hematology, One Week, October 10
Basic Electrocardiography, Two Weeks, October 3
Diagnostic Radiology, Two Weeks, October 17

Numerous other courses will be offered by the Divisions of General Medicine, General Surgery, Urology and Cystoscopy.

Address:

Registrar, 707 South Wood Street, Chicago 12, Illinois

IN
ACNE:

ACNEDERM
LOTION

is effective in 99.34%
of the cases, is well
tolerated and
cosmetically acceptable.

Niedelman, M. L.: Am. Pract.
& Digest Treat. 10:1001, 1959.

Starkman Chemists Ltd.
459 Bloor Street West
Toronto 4, Ontario

THE LANNETT COMPANY, INC.
Philadelphia 25, Pa., U.S.A.

POST GRADUATE STUDY

For Canadian and U.S.A. Practitioners

Are you preparing for any Medical, or Surgical
Examination?

Send Coupon below for valuable publication

"GUIDE to MEDICAL EXAMINATIONS"
PRINCIPAL CONTENTS

The F.R.C.S. England and Edinburgh.
The F.R.C.P. & S. of Canada and Certification Exams.
The M.R.C.P. London and Edinburgh.
Diploma in Anaesthetics.
The Diploma in Tropical Medicine.
Diploma in Ophthalmology.
Diploma in Psychological Medicine.
Diploma in Child Health.
Diploma in Physical Medicine.
Diploma in Public Health.
Diploma in Pathology.

You can prepare for any of
these qualifications by postal
study at home and come
to Great Britain for ex-
amination. We special-
ize in Post-graduate
tuition. Courses for
all Canadian and
U.S.A. qualifica-
tions.

**THE SECRETARY
MEDICAL
CORRESPONDENCE
COLLEGE**

19 Welbeck Street,
London, W.1.

Sir.—Please send me a copy of your
"Guide to Medical Examinations"
by return.

Name

Address

Examinations in which interested.....
C.M.A.

THE CANADIAN MEDICAL ASSOCIATION
JOURNAL
LE JOURNAL DE
L'ASSOCIATION MÉDICALE CANADIENNE

Editorial Office—150 St. George St., Toronto 5
General Secretary's Office—150 St. George St., Toronto 5

SUBSCRIPTION RATES

The Journal is supplied to paid-up members of the Canadian Medical Association as a perquisite of membership. Medical libraries, hospitals, and individuals may subscribe to the Journal at \$12.00 a year, payable in advance. There is a special rate for medical students residing in Canada of \$2.50 a year. Subscriptions and all relative correspondence should be addressed to the Subscription Department, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

INSTRUCTIONS TO CONTRIBUTORS

Manuscripts: Manuscripts of original articles, case reports, short communications, and special articles should be submitted to the Editor at the C.M.A.J. editorial office, 150 St. George St., Toronto, with a covering letter requesting consideration for publication in the *Journal*. Acceptance is subject to the understanding that they are submitted solely to this *Journal*, and will not be reprinted without the consent of both the Editor and the author. Articles should be typed on one side only of unruled paper, double-spaced and with wide margins. Carbon copies cannot be accepted. The author should always retain a carbon copy of material submitted. Every article should contain a summary of the contents.

The Editor reserves the right to make the usual editorial changes in manuscripts; these include such changes as are necessary to ensure correctness of grammar and spelling, clarification of obscurities or conformity to *Journal* style. In no case will major changes be made without prior consultation with the author. Authors will receive galley proofs of articles before publication, and are asked to confine alterations of such proofs to a minimum.

Reprints may be ordered on a form supplied with galley proofs.

References: Authors should limit references to published work to the minimum necessary for guidance to readers wishing to study the subject further. They should not quote articles they have never seen. Except in review articles, the maximum number of references should not be more than 25. References should be numbered in the text and should be set out in a numbered list at the end of the article, thus:

1. DOAKES, J.: *M. J. Kamchatka*, 1: 2, 1955, giving in order: (1) Author's name and initials in capitals. Where more than three authors are concerned in an article, only the first should be named, with *et al.* as reference to the others. (2) Quarterly Cumulative Index Medicus abbreviation of journal name. (3) Volume number. (4) Page number. (5) Year.

References to books should be set out as follows:

PICKWICK, S., *Textbook of Medicine*, Jones and Jones, London, 1st ed., p. 30, 1955.

Illustrations: Photographs should be glossy prints, unmounted and untrimmed, preferably not larger than 10 by 8 inches. Colour work can be published only at the author's expense. Magnification of photomicrographs must always be given. Photographs must not be written on or typed on. Identification can be made by pasting an identifying legend on the back. Patients must not be recognizable in illustrations, unless the written consent of the subject to publication has been obtained. Graphs and diagrams should be drawn in india ink on suitable white paper. Legends to all illustrations should be typed separately from the text of the article. Illustrations should not be rolled or folded.

CLASSIFIED ADVERTISEMENTS

Please send copy to the Advertising Department, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.
Rates: \$5.00 for each insertion of 40 words or less, additional words 10c each.
If a box number is required, there will be an additional charge of 50c on the first advertisement to cover postage and handling charges.
Classified advertisements must be at the office of the Journal not later than three weeks prior to date of issue.

Office Space

MEDICAL SUITE FOR SALE.—Splendid location, Bayview and Moore, 5 rooms, air-conditioned. Light and janitor service included, \$200. Professional offices in the building. Male doctor preferred. Apply 416 Moore Ave., Room 102, Toronto 17, Ontario.

MEDICAL-DENTAL SUITE, sparkling new, air-conditioned, architect designed. Off-street parking. 4 rooms, \$90 a month. Apply 1000 Dovercourt Rd., or phone LEnnox 4-9258 in Toronto.

FOR RENT.—Long established (45 years) doctor's office available in good location in Niagara Falls. For further information write or telephone W. T. McCallum, Q.C., Niagara Falls, EL 4-3052.

Positions Wanted

GENERAL SURGEON, 35, married, Canadian graduate and internship. Completing residency in U.S.A. June, 1960. Eligible for Canadian certification and American Board of Surgery. Desires association with a surgeon or group. Willing to do some general practice. Reply to Box 795, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

OBSTETRICIAN, GYNÆCOLOGIST.—Canadian born and graduate. London and New York training. Fellowship eligible. Considerable general practice experience. Would like to associate with individual, group or purchase practice. Available immediately. Reply to Box 918, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

CANADIAN F.R.C.S. in general surgery with thoracic training. Age 35. General practice and industrial experience. Association with established surgeon or group desired. Available, September 1960. Reply to Box 906, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

CERTIFIED OPHTHALMOLOGIST.—Age 35, married, six years' successful practice in large city. Wishes to relocate in a smaller Ontario city. Willing to associate with another eye or E.N.T. man; clinic or group. Reply to Box 928, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

E.N.T.—38 years old, male, married with one child. Has had considerable training and experience with E.N.T. practice. Qualified to practise and eligible for certification in Canada. Wish practice with a group or as a partner anywhere in Canada. Reply to Box 929, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

CERTIFIED SURGEON with large general practice in Niagara Peninsula, wishes to associate with an experienced general practitioner. Willing to work. Approximate area population 10,000, 10 minutes from new 250-bed open hospital. Remuneration will be excellent if the above requirements are fulfilled. Duties to commence about March 1st, 1961. Reply to Box 930, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

FEMALE PHYSICIAN.—Age 36, married, European graduate, L.M.C.C., registered in Ontario, multilingual, wishes medical, or medical administrative position with regular hours in Toronto. Reply to Box 931, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

ANÆSTHESIOLOGIST.—35, English, at present working in a university hospital in New York State, recently served as specialist in anaesthesia with the R.C.A.F. for three years. Wishes to join a group in Canada. Reply to Box 932, CMA Journal, 150 St. George Street, Toronto 5, Ont.

CERTIFIED INTERNIST ELIGIBLE.—Fellowship. Age 39. Eleven years in successful practice. Wishes to relocate. Association with an internist or group desired. A large centre in eastern Canada preferred. Good working knowledge of French. Eventual partnership desired. Reply to Box 876, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

Positions Vacant

PATHOLOGIST REQUIRED to direct laboratory services at the Swift Current Union Hospital (155 beds), also to supervise services in a group of small hospitals in the region. Must be experienced histopathologist. Regional tissue service provides 2500 surgical specimens annually. Canadian certification or eligibility preferred. Salary in the range \$15,000-\$20,000 per annum. Applications will be received by Regional Hospital Coordinator, Southwest Regional Hospital Council, 162-1st Avenue N.W., Swift Current, Saskatchewan.

ASSISTANT IN GENERAL PRACTICE to assist general surgeon and another general practitioner in suburban Toronto. Salary and car expenses. Reply to Box 635, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

ASSISTANT MEDICAL HEALTH OFFICER.—Applications are invited for the position of assistant medical health officer of the city of Regina. Applicant must be licensed to practice medicine in the province of Saskatchewan or eligible for registration there. Should possess a diploma or master's degree in public health. Applications should state age, qualifications, training and date available. References should also be given. Applications and enquiries should be directed to the Personnel Department, City Hall, Regina, Saskatchewan.

OPPORTUNITIES FOR A DOCTOR IN VAUXHALL, ALBERTA.—Very good prospects of a 25-bed hospital upon establishment of resident doctor service. Present hospital facilities 23 miles south. Population of Vauxhall is presently 950 and growing (in 1950 only 300). The trading area extending 25 miles east, west and north only, and not cutting into other hospital areas, contains 6000 population. Vauxhall is the progressive centre of this rich, densely irrigated agricultural area (200,000 acres under irrigation in above area), with established industry and prospects of more industry. It is the headquarters of the Bow River irrigation project (nearing completion), and the PFRA soils drainage lab and station for western Canada and the irrigation research farm are established here. All utilities, power, gas, water, and sewer, latest phone service, highway and rail service. For further information contact, James W. Muza, Secretary, Box 312, Vauxhall, Alberta.

WANTED.—Assistant to complete busy four-man general practice group in southern Ontario. Position available at once, but will hold to October for suitable person. Preference for recent Canadian, male, married graduates. Excellent training and experience in all aspects of general practice, including obstetrics, paediatrics, surgery, and anaesthesia. New 100-bed hospital. Salary \$650 per month and full car allowance. Vacation with pay. Interview to be arranged. Reply giving full particulars, including recent photo and phone number, to Box 911, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

\$800 MONTHLY plus car and phone expenses, month's vacation with pay yearly, for generalist with interest in anaesthesia. Ideal northwestern Ontario town. Rapid advancement for the right man. Reply to Box 920, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

LOCUMS NEEDED for October. All expenses paid plus \$750 salary. Reply to Box 921, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

ASSISTANT WANTED at once for general practice in Alberta town. Salary \$700 per month and partnership in one year if mutually satisfactory. British or Canadian graduates preferred. Reply to Box 922, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

LOCUM TENENS wanted for any period between now and December, 1960 for general practice in Alberta town of three thousand, with hospital. Salary—eight hundred dollars per month. Free accommodation possible for one or two people. Reply to Box 923, CMA Journal, 150 St. George St., Toronto 5, Ontario.

STATISTICIAN.—Opening September, 1960 for junior statistician to act as assistant, division of statistics and biometrics, department of laboratories, Toronto General Hospital. Write or telephone, Director of Laboratories, Toronto General Hospital, 101 College Street, Toronto, Ontario, EMpire 6-8211, Local 2108.

ASSISTANT REQUIRED FOR GENERAL PRACTICE in growing town of 20,000 which by July, 1960 will be a city of 50,000. Excellent hospital facilities. Salary \$650 monthly plus commission. Please reply stating age, qualifications, marital status to Box 135, Dartmouth, N.S.

WANTED.—ANÆSTHETIST, eligible for certification Scarborough General Hospital. Apply Dr. R. Hargrave, 693 McCowan Rd., Scarborough, Ontario.

PSYCHIATRISTS AND PHYSICIANS.—Kentucky Department of Mental Health has a progressive treatment programme for the mentally ill. To continue our programme and meet planned expansion, we need the services of psychiatrists and staff physicians at four state hospitals and in an expanding community services programme. Requirements—chief of medical staff and psychiatrists approved psychiatric training, plus three years' experience (D.Psy. preferred). Salary from \$10,344. Staff physicians medical degree and two years' experience including one year mental hospital training or experience. Salary from \$8940. Excellent retirement and leave benefits. Starting salary depends on experience and training. Send resume of training and experience to H. L. McPheeters, M.D., Commissioner, Department of Mental Health, 620 South Third Street, Louisville 2, Kentucky, U.S.A.

WANTED (SIX) FULL TIME HOUSE PHYSICIANS.—Short term general hospital 345-beds, 50 bassinets, rotating service, not approved for residency. Educational programme available. Large percent of medical staff faculty are members of medical school. Applicants must be graduates of approved medical schools of United States, Canada or England. Must have at least one year approved internship. Salary range \$8000-\$10,000 depending on qualifications and further training or experience. Apply to John Goldsborough, M.D., Director of Medical Education, Kentucky Baptist Hospital, Louisville 4, Kentucky.

PSYCHIATRIST to work with a group of psychiatrists and psychologists in a private clinic in central Ontario. Local population over 100,000. Should be fully certified or eligible for certification examinations and interested in practising adult psychotherapy and handling diagnostic referrals from physicians in the area. Opportunity to broaden work into other areas according to personal interests. Reply to Box 933, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

WANTED.—RESIDENT PHYSICIAN for tuberculosis and geriatric hospital and in addition, for medical work in area chest clinics. Personnel practices are excellent. Apply to Medical Superintendent, The Freeport Sanatorium, Kitchener, Ontario, stating experience and salary desired.

OTOLARYNGOLOGIST.—Large central Ontario city near Toronto. E.E.N. & T. group. Good hospital facilities and working conditions. \$10,000 p.a. Minimum plus percentage. Reply to Box 934, CMA Journal, 150 St. George Street, Toronto 5, Ont.

WANTED.—GENERAL PRACTITIONER or internist willing to do general practice for group in Toronto. Good salary, excellent facilities, opportunity for partnership. Also part-time orthopaedic surgeon required. Reply to Box 935, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

ASSISTANT WANTED.—Busy general practice, central Ontario town. Ultra-modern new offices, equipped with dispensary, x-ray and E.C.G. Salary \$650 a month and car allowance. Bonus end of one year. Lakeshore house available at nominal rental. Partnership if mutually satisfactory. Opportunity here to develop clinic with right man. Excellent schools. Well-equipped new open hospital nearby. Reply to Box 936, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

DOCTOR WANTED.—General practice in northern Saskatchewan. Combined office and modern residence for rent. Well-equipped 23-bed hospital. Gravelled highway. Gross income \$18,500. Doctor's equipment and furniture may be purchased on easy terms. Reply to Secretary-Manager, Spiritwood Union Hospital, Spiritwood, Sask.

ASSOCIATE REQUIRED with a view to a permanent arrangement in a Toronto suburban practice. Good salary during initial trial period. Reply to Box 937, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

WANTED.—Locum tenens for October 9th to 31st, 1960. Northwestern Ontario town. Salary \$450 per month plus furnished house, car also supplied if needed. Reply to Box 938, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

Practices

EXPANDING GENERAL PRACTICE in Lake Nipissing area. Basically office practice in town of 900. Area population over 5000. One other doctor. Two open hospitals within twenty minutes' drive, plus three nursing homes in town. Fully equipped office, records, etc. \$2500. Present occupant specializing. Reply to Box 925, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

SOUTHERN ONTARIO VILLAGE.—10 miles to hospital. Growing general practice, grossed \$43,000 in 1959. For sale for value of real estate and equipment—\$40,000. Will introduce 3 to 6 months. Specializing. \$10,000 down, balance to suit purchaser. Reply to Box 926, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

DOCTOR'S HOUSE AND PRACTICE FOR SALE on main Toronto-Kingston highway. One other doctor in town. Modern hospital 15 miles. Well-built brick house and office combined, with very pleasant property, in attractive small town of 1400 with excellent surrounding rural area. Reasonable price. Reply to Box 927, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

FOR SALE.—Large well-equipped general practice in suburban Toronto. Adequate for two doctors. Owner specializing. Available immediately. Reply to Box 915, CMA Journal, 150 St. George St., Toronto 5, Ontario.

HOUSE AND GENERAL PRACTICE FOR SALE in attractive village with large surrounding area in southern Ontario. Two open hospitals within short distance. Reasonable price. Owner leaving due to ill-health. Reply to Box 939, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

PRACTICE WITH HOUSE FOR SALE in a large southern Ontario town. Beautiful location. Excellent hospital facilities. Introduction if desired, terms can be arranged. Owner specializing. Reply to Box 770, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

Residencies and Internships

PATHOLOGY RESIDENCY.—705-bed hospital will have vacancy for first year resident July 1, 1960. Comprehensive 4-year programme supervised by 3 certified pathologists, modern laboratory facilities. Write E. M. Knights, M.D., Director, Pathology Department, Hurley Hospital, Flint 2, Michigan.

SENIOR INTERN in anaesthesia for one year beginning January 1st, 1961, salary \$2700. Address application to Superintendent, Sunnybrook Hospital, Toronto 12, Ontario.

ASSISTANT RESIDENTS IN RADIOLOGY beginning July 1st, 1960. Address application to Superintendent, Sunnybrook Hospital, Toronto 12, Ontario.

RESIDENCY AVAILABLE IMMEDIATELY, 1st year in OB & GYN in fully approved 3-year programme at a 191-bed general hospital with 43 bassinets; 2600 deliveries in 1959. \$220 stipend first year with full maintenance and medical care. Address inquiries to Dr. Norman Levin, Chief of Obstetrics, Lutheran Hospital of Maryland, Baltimore 16, Maryland.

NEW YORK CITY.—Residencies and internships available immediately and for 1961. 250-bed, ten story hospital. Integrated teaching programme, all branches medicine. Accepting men, women including married and/or engaged couples training together. Reply to Box 940, CMA Journal, 150 St. George Street, Toronto 5, Ontario.

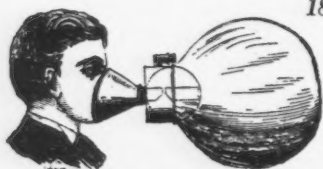


ANAESTHETIC NEWS

The History of Anaesthetic Apparatus

PART IV

Many great men have contributed to the development of anaesthesia and the apparatus necessary to induce it. One of these men, whose name occupies a prominent place, was Joseph T. Clover. Clover's experiments and inventions have been mentioned in previous articles, then in 1877 his name once more became noteworthy. It was in that year that he announced the completion of his "portable regulating inhaler".



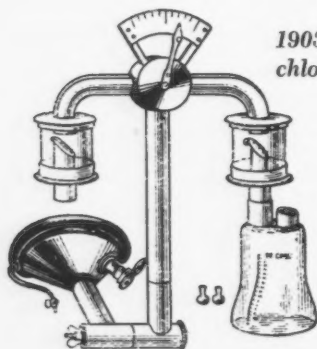
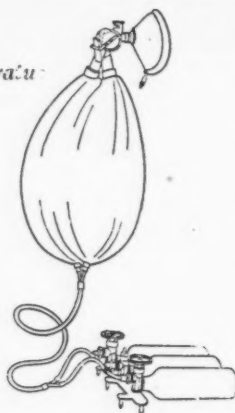
1877 Clover's portable regulating inhaler

This inhaler did much to popularize the use of ether at the expense of chloroform. It was later perfected by Sir Frederick Hewitt who enlarged the inner bore of the central tube and arranged for its rotation within the ether reservoir.

Hewitt's main contribution to the science, however, was the invention of the first practical machine for administering nitrous oxide and oxygen in fixed proportions. Following the principle devised by Hewitt, a dental manufacturing company produced the first American gas-oxygen apparatus in 1899.

1892 Hewitt's gas-oxygen apparatus

Hewitt was also the anaesthetist in attendance at the appendectomy on King Edward VII in 1902, and nine years later he was knighted. Just after the turn of the century, a chloroform-regulating device was brought out which accurately measured the strength of chloroform and air. Two gravity beads floating at different levels, enabled the operator to regulate the temperature between 13 degrees and 15 degrees C. and the stopcock was made in such a way that when the pointer was at the end of the arc nearest the chloroform, the maximum quantity being administered was 2%. This machine which appeared in 1903 was the work of Vernon Harcourt.



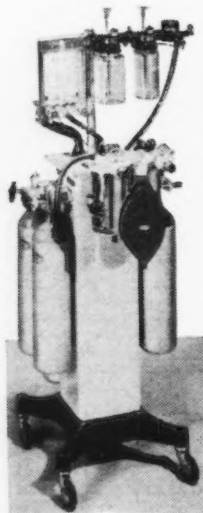
1903 Vernon Harcourt's chloroform regulator

BOC PRODUCT NEWS

The "Pedestal" stand is an alternative to the conventional anaesthetic table for accommodating the Boyle or Gillies Apparatus. The Boyle head is mounted in a

readily detachable manner on top of the column and the whole unit occupies a much smaller floor space than the table model.

For descriptive literature, write or phone, British Oxygen Canada Limited, Medical Division, 355 Horner Avenue, Toronto 14, Ontario.



The Pedestal Boyle

BRITISH OXYGEN CANADA Limited ST. CATHARINES, TORONTO, MONTREAL

MEDICAL NEWS in Brief

(Continued from page 269)

JAMES VINCENT LA DUCA



The U.S. Federal Bureau of Investigation is conducting an investigation to locate James Vincent La Duca, who is being sought for violation of the Taft-Hartley Act.

La Duca reportedly wears eye glasses. When examined in 1957, he was found to have hyperopia with hyperopic astigmatism. He was presbyopic and found to be very sensitive to light. He was given the following prescription for corrective glasses:

Right eye: + 1.25 + 0.75 cyl. AX 180
Left eye: + 0.50 + 0.75 cyl. AX 180
Bifocal: Add O.U. 1.25 sph.

La Duca is described as follows: race, white; birth data, age 47, born in Buffalo, N.Y., 10/19/12; height, 5' 11"; weight, 174 lb.; hair, sandy brown, blond, receding in front; eyes, blue; build, medium.

If you have any information concerning this man, or if you are contacted by him in the future, please notify The Commissioner, Royal Canadian Mounted Police, Ottawa.

ACUTE AND CHRONIC RELAPSING PANCREATITIS

Pancreatitis may be acute or chronic. Clinically, the cardinal feature is the attack, the major feature of which is pain in the upper abdomen. This pain is of variable type, severity, frequency and duration. While rarely it may be essentially absent or mild, it usually is severe enough to necessitate repeated doses of an opiate. Characteristically, the concentration of serum amylase or lipase or both is increased during the acute manifestation. In later stages of the disease the concentration of enzymes may not be increased during

(Continued on page 27)

MEDICAL NEWS in brief
(Continued from page 24)

acute seizures, because of damage to the secretory cells of the pancreas. Eventually, the patient may have one or more complications, such as pancreatic calcification, diabetes mellitus, steatorrhœa, gastro-intestinal hæmorrhage, pancreatic pseudocyst and abscess. He is unlikely to die of an acute attack or even of a complication of the disease, but is more prone to die ultimately of some unrelated disorder, such as cerebrovascular disease.—E. E. Gambill: *Proc. Staff Meet. Mayo Clin.*, 35: 67, 1960.

**FEVER SECONDARY TO
INGESTION OF QUINIDINE**

Febrile reactions to quinidine may occur promptly upon repeated administration of the drug or after seven to 10 days of continuous administration. In a sensitive person the temperature rises promptly after administration of the drug and returns to normal within 24 hours or less after the drug is discontinued. The patient is usually not as sick as the febrile response would suggest. A low-normal leukocyte count with polynucleosis and a shift to the left of neutrophils is demonstrated frequently. The fever may or may not be accompanied by symptoms of cinchonism or by rash or purpura. Cross-reactions to quinine may occur.

Browning and Heck (*Proc. Staff Meet. Mayo Clin.*, 35: 111, 1960) point out that it is important to consider drug reaction as a possible cause of fever observed in any patient taking quinidine, because otherwise it might be mistakenly diagnosed as due to embolism or subacute bacterial endocarditis, which are common in patients with atrial fibrillation. If idiosyncrasy to quinidine develops, it is best to use another drug such as procaine amide or digitalis.

**A.C.P. POSTGRADUATE
COURSES**

The American College of Physicians offers the following courses for the autumn-winter session of 1960-61:

"Hæmatology and radioisotopes": Ohio State University College of Medicine, Columbus.

"Cancer and the internist—1960 concepts": Memorial Center, Sloan

Kettering Institute for Cancer Research, New York, N.Y.

"Electrocardiography": University of Utah College of Medicine, Salt Lake City.

"Recent advances in drug therapy": University of Washington School of Medicine, Seattle, Washington.

"Mechanisms of disease": Columbia University College of Physicians and Surgeons, Presbyterian Hospital, New York.

"Selected topics in internal medicine": University of Oklahoma School of Medicine, University Hospitals, Oklahoma City.

All courses have been arranged through the generous co-operation of the directors and the institutions at which the courses will be given. Tuition fee: members \$60.00; non-members \$80.00. Registration forms and requests for information should be directed to Edward C. Rosenow,

(Continued on page 28)



on the spot coverage

A TOPICAL FUNGICIDE FOR TOPICAL FUNGOUS INFECTIONS

Athlete's foot is caused by fungi invading the horny, keratinized layers of the skin that are not reached by the normal blood supply. Desenex applied topically to superficial fungous infections brings the antifungal undecylenic acid and zinc undecylenate into direct contact with the fungi. Hundreds of thousands of cures in athlete's foot have resulted from topical treatment with Desenex — proved to be among the least irritating and best tolerated of all potent fungicidal agents. Pennies per treatment — Desenex Ointment may be applied liberally to both feet every night for a week and a half from a single tube.

Ointment & powder & solution

Desenex *Maltbie*

Maltbie Laboratories Division, Wallace & Tiernan Ltd., Scarborough, Ontario

Canadian Distributor — Elliot-Marion Company, Ltd., Montreal 28, P. Q.

PHOTOGRAPH, COURTESY DEPARTMENT OF DERMATOLOGY, UNIVERSITY OF PENNSYLVANIA

PD-01

MEDICAL NEWS in brief
(Continued from page 27)

Jr., M.D., Executive Director,
American College of Physicians,
4200 Pine St., Philadelphia 4, Pa.

W.M.A. XIVth GENERAL
ASSEMBLY

The XIVth General Assembly of the World Medical Association will take place in Berlin from September 15 to 22, at the same time as the 63rd Deutsche Arztag, the

annual meeting of the German Medical Association. The Bundesärztekammer (German Medical Association), as host organization, very cordially invites colleagues from all parts of the world to come to Berlin.

The German Medical Association will do their best to make the visit to Berlin an impressive one. The sessions of the General Assembly of the World Medical Association and the 63rd Deutsche Arztag will be supplemented by

a full program of social events, scientific films from several countries, and visits to hospitals and large industrial factories. In addition to a wide choice of theatrical performances and concerts, visitors will have an opportunity to see museums and monuments of both old and contemporary Berlin. The Annual Dinner will be held in the "Palais am Funkturm". The traditional excursion will take visitors to the surroundings of Berlin and its lakes. A fashion show with creations of the Berlin "Haute-Couture" is being organized for the ladies. Upon request, visitors can obtain invitations to doctors' families in order to further the mutual understanding by personal contact. Post-convention tours through Germany and other countries in Europe are being arranged by the travel agency "D.E.R."

Further information can be obtained from: Bundesärztekammer-Kongressbüro, Köln-Lindenthal, Haedenkampstr. 1, Germany.

"Are the xanthines effective in ANGINA PECTORIS?"

(Abstract of the paper with above title)

A favorable response was unequivocally demonstrated with aminophylline when administered intravenously to angina pectoris patients. In sharp contrast the author, noted for his original contributions to cardiovascular research, found oral administration ineffective in all patients tested. This suggested that the failure was correlated with sub-threshold theophylline blood-levels obtained with oral administration.

A 20% alcohol-solution of theophylline (Elixophyllin®) has been shown to provide blood levels comparable to those obtained with I.V. administration of aminophylline. This oral preparation and a placebo (identical in appearance, taste and alcoholic content) were

tested by the electrocardiographic response obtained and by a double-blind clinical evaluation.

The author reported: "In the light of these findings, conclusions derived from animal experiments which have classed theophylline as a 'malignant' coronary vasodilator must be rejected for man." Elixophyllin administered orally to 30 patients was effective "not only in control of symptoms but in its modifying action on the electrocardiographic response to standard exercise. The efficacy of this preparation is based on the rapid absorption and attainment of high blood levels made possible by the vehicle employed."

(Russek, H. I., Am. J. Med. Sc. Feb., 1960)

MOTOR EXHAUST GASES AND LUNG CANCER IN CINCINNATI

A survey in 1955 by Mills showed that a high degree of mathematical significance existed between lung cancer incidence and cigarette smoking, living in air-polluted or clean residential areas, and driving mileages in urban traffic. Further analysis (*Am. J. M. Sc.*, 239: 316, 1960) of the same basic survey data now shows the lung cancer death hazards to be greatest at all ages above 40 for drivers who are residents of "polluted" areas, slightly less for drivers residing in clean suburban areas, and utterly lacking for drivers residing far out in clean rural areas whose driving is mostly on open country roads. In general, urban residents exposed to urban traffic for over 12,000 miles per year have over twice the lung cancer incidence rates of those with lesser urban driving mileages.

Mills recommends that the medical profession give specific recognition to these urban driving hazards and to motor exhaust gases as the dominant factor in today's increasing development of the ozone-type smogs now recognized as community health hazards at ozone concentrations above 0.1 part per million.

CLINICAL REFERENCE DATA ON

ELIXOPHYLLIN®

FORMULA: A hydro-alcoholic solution of theophylline. Each 15 cc. (1 tablespoonful) contains 80 mg. theophylline (equivalent to 100 mg. aminophylline) and 20% ethyl alcohol.

ORAL DOSAGE: First 2 days—doses of 45 cc. t.i.d. (before breakfast, at 3 P.M., and on retiring).
Thereafter—doses of 30 cc. t.i.d. (at same times).

AVAILABLE: Prescription only; bottles of 16 fl. oz. and 1 gallon.

SPECIAL REPRINT: Reprint of Dr. Russek's paper abstracted above on request.

Sherman Laboratories
Windsor, Ontario

QUINIDINE IN CHRONIC ATRIAL FIBRILLATION

One hundred patients in hospital with chronic atrial fibrillation were treated by bishydroxycoumarin for anticoagulant effect and then given quinidine to the point of reversion, toxicity or a dosage of 1 g. every two hours for six doses. Prolongation of the prothrombin time to twice that of controls was effected by administration of bishydroxycoumarin over a period of 12 to 14 days before attempted reversion. Fifty-seven patients reverted to regular sinus rhythm and were so maintained on smaller doses of quinidine throughout the remainder of their hospital stay. There was one death secondary to resistant decompensation and no embolic complications in the anticoagulant and quinidine group, compared with 18 deaths and a 4% incidence of non-fatal thromboembolic complications in the untreated group. Ten patients who were still decompensated at the time of the attempted reversion, in spite of intensive therapy for 14 days, became fully compensated upon reversion and maintenance of regular sinus rhythm. Patients with bundle branch block and marked cardiomegaly fared no worse than others.

On the basis of these observations by Freeman and Wexler (*Am. J. M. Sc.*, 239: 181, 1960) it would appear safe and desirable to use vigorous measures directed towards establishing regular sinus rhythm on hospital patients who have chronic atrial fibrillation. This applies especially to the combination of anticoagulant and quinidine therapy.

A SCREENING TEST FOR ADRENAL CORTICAL INSUFFICIENCY

A rapid, simple screening test for the detection of adrenal cortical insufficiency is reported by Batchelor and Mosher (*Am. J. M. Sc.*, 239: 175, 1960). More than 50% reduction in urinary sodium concentration was observed four hours after the intramuscular administration of 25 units of adrenocorticotrophic hormone (ACTH) in subjects with responsive adrenal cortices. No significant fall in urinary sodium concentration was observed after ACTH administration in patients with known hypo-

adrenocorticism during the four-hour test period. Further studies are contemplated to evaluate the usefulness of this urinary sodium-ACTH test.

CONVULSIONS IN MYXEDEMA

In a 38-year-old white woman with myxedema and convulsions of long duration, the convulsions subsided rapidly after treatment with desiccated thyroid. This medication was continued for four

years, and the convulsions did not return.

Evans (*Ann. Int. Med.*, 52: 434, 1960) discusses some of the factors which might affect cerebral function in myxedema. The convulsions in this case probably represent an unusual neurological complication of the same derangement of metabolism and cerebral function which produces the profound psychic disturbances and many of the other neurologic abnormalities sometimes seen in patients with myxedema, e.g. "myxedema madness" and coma.

true hydrocholeresis plus reliable spasmolysis...

DECHOLIN with Belladonna

REG. TRADEMARK

- relieves the pain of smooth-muscle spasm
- steadies the "nervous gut"
- facilitates biliary and pancreatic drainage

available: DECHOLIN with Belladonna Tablets: dehydrocholic acid, AMES 3¼ gr. (250 mg.) and extract of belladonna ⅙ gr. (10 mg.) Bottles of 100 and 1000.

for free-flowing "therapeutic bile"...

DECHOLIN

REG. TRADEMARK

(dehydrocholic acid, AMES)

- medical and postoperative management of biliary tract disorders
- routine physiologic support for geriatric patients
- constipation—natural physiologic laxation without catharsis

available: DECHOLIN Tablets: dehydrocholic acid, AMES 3¼ gr. (250 mg.). Bottles of 100 and 1000.

AMES
COMPANY OF
CANADA, LTD
Toronto - Ontario



NEW

the unique
anorexic agent
free of
CNS
stimulation

for the . . .

cardiac/hypertensive obese

New Tenuate provides an anorexic effect which assures appetite inhibition, free of CNS stimulation.¹⁻⁷ ECG studies⁸ prove Tenuate does not affect heart rate, blood pressure, pulse or respiration.

Weight loss with Tenuate averages 1.5 pounds per week.^{3,4} Resultant weight loss, by reducing the cardiac load, improves prognosis . . . and, frequently when hypertensives lose weight, blood pressure drops. Thus Tenuate fulfills an important medical need . . . weight loss in cardiac/hypertensive patients.

PROOF—SAFETY—ECG EVIDENCE⁸

Human I.V. Studies with Tenuate 10 mg., IV equiv. of 100 mg. oral dose (4 times recommended dose)

| Patients | Sex | Age | Diagnosis | Blood Pressure | | ECG | |
|----------|-----|-----|--|----------------|-------------|---|------------|
| | | | | Before Inj. | After Inj.* | Control | After Inj. |
| E. M. | F | 62 | Diabetes mellitus. A.S.H.D., compensated. Obesity, postmenopausal. | 125/54 | 116/52 | Sinus rhythm. Nonspecific myocardial changes. | No change |
| F. S. | M | 67 | A.S.H.D., mild hypertension. Early congestive cardiac failure. | 175/90 | 175/90 | Sinus rhythm. Early LVH. | No change |
| M. A. | F | 68 | Essential hypertension. Degenerative osteoarthritis. Obesity. | 207/104 | 194/98 | Sinus rhythm. Normal tracing. | No change |
| S. G. | M | 30 | Normal subject. | 126/74 | 122/78 | Sinus rhythm. Normal tracing. | No change |
| D. A. | M | 33 | Normal subject. | 112/80 | 121/90 | Sinus rhythm. Normal tracing. | No change |

*This represents the averages of the readings taken at 30-second and 1-minute intervals for 5 minutes prior to injection and 5 minutes after injection of the drug. The amount of fluctuation was considered insignificant.